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ABSTRACT

An international conference attended by 59 participants from 12 countries was organized to present Yugoslavia as a case study to the international audience, to bring to the Yugoslav audience a variety of international experiences in library and information science education and training, and to acquaint participants with some of the new perspectives and conceptual changes that are taking place in the field. A foreword and introductory remarks are followed by six papers comprising a case study of Yugoslavia: "Library Education in Croatia: State of the Art and Trends" (Lj. Markic-Cucukovic); "An Approach to Education in Information Sciences at Universities in Croatia" (N. Prelog); "A Draft for Organizing a Postgraduate Course in Information Science at the University of Skopje" (Z. Pejova); "Postgraduate Programme of Librarianship, Documentation and Information Science at the University of Zagreb" (V. Muljevic); "Bibliometric Analysis of Master Theses in Information Sciences (Postgraduate Studies in Librarianship, Archivistics, Museology and Information Science, 1961-1984, Zagreb, Yugoslavia)" (M. Tudjman, M. Milas, N. Tudor-Silovic, D. Boras); and "Library and Information Science Education for Yugoslavia: An External View of Needs and Problems" (W. L. Saunders). The next section comprises 12 papers revealing international experiences and approaches: (1) "The Structure of Library and Information Science Education in the United Kingdom" (B. Cronin); (2) "Much Ado about Little--Education for Research in Library and Information Science in the Nordic Countries (S. Schwarz); (3) "Current Technological Developments and Their Impact on Education in Library and Information Science Programs in Latin America" (A. Araya Marin); (4) "Library Education and Training for Sub-Professionals in Developing Countries" (E. D. T. Kularatne); (5) "Continuing Education and Training: The International Experience of the British Council" (D. Gunton); (6) "Contribution of UNESCO in the Education and Training of Information Specialists" (K. Roberts); (7) "User of Information Education through School Libraries" (T. Blazekovic); (8) "The Role of Information Science Education for Social Scientists and the Development of Information Activities" (S. Splichal); (9) "Education for New Professional Roles in the Information Society" (M. L. Dosa); (10) "Education for the Information Professions: The International Trends toward an Integrated Approach to the Education of Information Professionals" (B. Rugaas); (11) "Information Science Education for the 80s" (G. Wersig); and (12) "Expanding Horizons: Trends in Education for Library and Information Science" (B. Cronin). Final remarks and a list of resource persons and participants conclude the report. (THC)

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FOREWORD

The Referral Centre of the University of Zagreb first organized an international conference at the Inter-University Centre of Postgraduate Studies in Dubrovnik in 1977 under the initiative and guidance of the late Professor Božo Težak. A series of meetings entitled *Universities in the World Network of Information and Communication* subsequently took place in 1979, 1980 and 1981.

Those first meetings initiated the exchange of views on an international scale. The active and continuous participation at the meetings of some distinguished scholars in the field of library and information science helped to emphasize the importance of the topic and to provoke much needed official recognition of activities in the field. It also gave immense moral support to the group of devoted workers scattered around Yugoslavia in their efforts to promote library and information studies and services.

The topic of education in library and information science was a logical result of events. The ever-increasing demand for the services called, and calls, for qualified personnel. Although the only Yugoslav postgraduate study programme in existence for more than 20 years in Zagreb, came to a standstill partly because it could not adequately follow the rapid growth and changes taking place in the field, other attempts to establish undergraduate and postgraduate studies were made or planned. In this given situation it was vital to learn what was going on elsewhere in the world.

All of this prompted the Referral Centre of the University of Zagreb to organize an international meeting to enable the resource persons and participants from different countries, together with the Yugoslav specialists to discuss the current issues. Yugoslavia availed itself of the host's privilege to impose its own problems and needs on the conference timetable and, through discussions and dialogues, to receive valuable feedback. The programme also gave foreign participants the opportunity to present their experience and to discuss possible future developments in the field.

The host country had the full benefit of the expertise and the goodwill of many distinguished specialists from abroad and we believe that the interest shown by the Yugoslav participants fully justified the hard work offered so willingly.

We, as the organizers, are pleased to report that the conference was a rewarding experience in many ways. It proved, among other things, that international cooperation can, with little previous practice and reference, be made to work and that clear objectives and a little friendly persuasion can help realize the participation of many enthusiastic individuals and the engagement of modest financial support.

It is our pleasant duty, on behalf of other members of the Organizing Committee, too, to thank the United Nations Educational, Scientific and Cultural Organization - UNESCO, the British Council, the German Foundation for International Development (DSE), Deutsche Gesellschaft fuer Dokumentation (DGD), Gesellschaft fuer Information und Dokumentation mbH (GID) and the Yugoslav sponsors, the Unions of Republic and Provincial Communities of Interest for Scientific Activities in SFR Yugoslavia, the SR of Croatia Community for Scientific Work and the University of Zagreb, for their help and support.

The international event, organized in 1984, consisted of a course and a conference entitled *Technology and Education in Library and Information Science*. The International Course held from May 14-19, 1984 was dedicated to technology, word processing in particular, and is reported in the IRCIHE Bulletin, vol. 10, Nos. 2-3 1984. The International Conference, held from May 21-26, 1984 dealt with library and information science education the proceedings of which are presented in this volume. The Conference was attended by 59 participants from 12 different countries and was directed by Professor W.L. Saunders.

Almost all the papers in this volume were presented by their authors at the Conference and were followed by lively discussion which, however, was not recorded. The order of presentation at the Conference has been somewhat altered for this publication to follow logically the main objectives of the organizer, which was, as extensively as possible in a single meeting, to present Yugoslavia as a case study to the international audience, to bring to the Yugoslav audience the variety of international experience in library and information science education and training and to acquaint them with some of the new perspectives and conceptual changes that are taking place in this field now.

It is hoped that this proceedings of the International Conference *Education in Library and Information Science* will reflect these intentions.

EDITORS

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EDUCATION AND TRAINING IN LIBRARY AND INFORMATION SCIENCE
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PART I
INAUGURAL

WELCOMING ADDRESS

Lojze Skok,
Yugoslav Council of the Social System of Information, Beograd, Yugoslavia

Ladies and Gentlemen, Comrades,

It is a particular pleasure for me to open the International Conference on Education in Library and Information Science, and to welcome the participants of this Conference on behalf of the Yugoslav Council of the Social System of Information.

The Yugoslav Council of the Social System of Information was constituted according to the Law on the Social System of Information and the Information System of the Fedaration, and exerts influence on the establishment, functioning and development of the social system of information in Yugoslavia.

I believe it would only be appropriate to explain to the foreign participants of this Conference the meaning of the term "social system of information" or overall Information System.

To put it simply, it represents - in the broadest sense - the organization of data processing and its use in the whole society, excluding the mass media.

Naturally, education in the field of library and information science is also of great significance to our Council.

The Council commenced its work about a year ago, and has been, up to now, primarily engaged in exerting an influence on the legislative activities in this field, as well as on the initiation of broader social, political, public and professional activities aimed at creating conditions for the further development of the social system of information.

In the preparation of its work programme , the Council devoted attention to the education of personnel, indispensable for the achievement of an advanced level of development of information sciences and the social system of information, in general. The problem od education in the field of information sciences is still very acute and is one that no society can ignore. For these reasons the Yugoslav Council of the Social System of Information plans to consider in the second half of this year the open issues of education and personnel in the social system of information, with the purpose of initiating broader social actions for the better organization of education processes in our country in this field. Our objective is, given the existing material and other circumstances, to assess our possibilities and use them to the maximum in addressing the personnel training issue. Among other things, this International Conference will make a significant contribution to our future course of work. We hope to learn something from the experience of others in the field of personnel training in information sciences, which we are convinced will be very valuable to us.

Allow me to take advantage of this opportunity to present briefly my personnal views regarding the training of personnel in the information sciences. I believe that vocational training is at this moment of vital importance for the further development of library and information sciences. Scientific and research work necessary in this field requires the existence of a developed vocational education at all levels, particularly at that of higher education.

I have to mention that Zagreb, the city which organized this Conference, has done most for personnel education in library sciences in our country. Let this statement be a modest tribute to their activity in this field.

The breakthrough of new technology, particularly that pertaining to automation, has changed and will continue to increasingly change the profiles of our professional workers. Just as the underdevelcped countries were once those in which the industrial revolution was late in arriving, the underdeveloped countries are today those lagging behind the information revolution. Topical and professional information is of vital importance for progress, particularly the progress of work, development of the economy and the overall social and creative life. Those who neglect information are not able to develop adequately in their work; their whole existence use information, it is indispensable for those who produce it, as well as those who seek and want to use it, to have sufficient skills and the necessary knowledge. That is why an adequate educational system in the field of information sciences is one of the crucial issues in the social development of a country.

International cooperation in this sphere is of exceptional significance since it enables the necessary transfer of knowledge and ensures multiple application of experiences gained in one country.

In that respect, I point once again to the importance of this International Conference.

Finally, allow me to wish you a pleasant stay in our country and every success in your work.

Informatol. Yugosl.
Sep. Spec. 6, 5 - 7 (1984)

INTRODUCTORY ADDRESS

Dubrovnik, May 1984

Wilfred L. Saunders
Conference Director

In the middle 1960's, when I was full of the excitement involved with setting up a new Postgraduate School of Librarianship and Information Science in the University of Sheffield I was visited by a Yugoslav professor - Professor Težak - who was equally excited about the postgraduate programme which he was engaged in launching, in Yugoslavia. We corresponded from time to time until his untimely death, and that contact with such an eminent figure, together with my recent consultancy in Macedonia - of which I shall say more later - gave me a link with Yugoslavia which I have always very much valued.

In those early days when Professor Težak and I were both engaged in breaking what we felt to be new ground, it certainly never occurred to me that one day - much later in my career - I might have the good fortune to be invited to direct an international conference in Yugoslavia on the subject which was to dominate both Professor Težak and my own working lives - professional education. It was a great honour to be invited and I was delighted to accept.

This pleasure was further enhanced as time went by, and the programme co-ordinator, Neva Tudor-Šilović periodically telephoned to Sheffield, to tell me of progress and of the latest additions to the distinguished list of world figures in our field who had agreed to participate. This list includes many old friends, not to mention others, well known to me by name, and whom I am looking forward to getting to know during this coming week. I know I speak for all of us from overseas when I congratulate our Yugoslavian organising committee on the successful outcome of what I know must have been a very complex planning operation.

Now I am not proposing to speak at any great length at this stage: my principal contribution will come later this morning. But as Conference director I do want first of all to add my own very warm greetings to those you have already received from Dr. Skok. And I would also like to say just a little about the structure and background and rationale of the programme.

My starting point here is that, as all in this room will be aware, library and information service is in a state of change and development, the speed and fundamental nature of which have never been experienced before. Inevitably this calls for - and indeed, is sometimes caused by - change in the professional education of those who create and operate library and information services. A major factor in the rapidly evolving situation in which library and information educators now find themselves has of course been the advent and impact of information technology, one very important aspect of which - word processing - was the subject of last week's conference. But there are many other forces at work, and in a study of Manpower Education and Training which is being carried out by the Library and Information Services Council, we in Britain identified some of these. As they are not peculiar to the British situation but would, I believe, have a very general application, it may be of interest if I mention them this morning. They are as follows:

a. The number and range of published information sources will grow and the range and pattern of information services will become more complex.

b. There will be a parallel growth in the number and significance of people engaged in the generation, management and marketing od databases, with fragmentation of their effort among many organisations of different kinds.

c. Technological advance will require systems designers and managers who understand the content of what they are handling and library/information workers who can interact with systems specialists and together with them tackle the management problems of computerised services.

d. The character of the user population is likely to change profoundly, eg as a result of young people becoming increasingly familiar with computer methods.

e. Users' interest in high-quality information (i.e. precise, relevant and reliable information) is likely to grow, putting a premium on information analysis and repackaging in local community information as well as in scientific, technical and economic information.

f. Because of various factors, including those I have mentioned, the functions of libraries and information departments, and therefore the types of skills and knowledge required, are likely over time to change significantly.

g. Traditional barriers between information functions ranging from author to end-user are likely to break down with the advance of electronic publishing, so requiring some of the personnel involved to straddle two or more of

these functions.

If this assessment is valid it will follow that the sort of future we are moving into will require a wide variety of specialities in the provision of library and information services and our committee identified authorship, editing, printing, primary publishing, document delivery, collection management conservation, data-base and catalogue production, thesaurus construction, systems design and management, on-line computing and searching, the management of resources, records and archives, information analysis and repackaging, question-and answer services, marketing, research, advice, brokerage, signposting and referral, exhibitions, consultancy - and many others. A formidable list, I am sure you will agree.

Now what I have been saying so far is based on work and thinking which is aimed at the future. Well, "the future" covers a very long way ahead, and for those who plan and operate professional education programmes a rather clearer time scale is needed. This is extraordinarily difficult to forecast, and in any case it will obviously vary very much from one country to another. What is certain is that an effective programme of professional education for our field must maintain a nice balance between the needs of the present and preparing students minds and attitudes for the needs of the future: they will, after all, be running the library and information systems of the early decades of the 21st century. This means that those responsible for professional education must not be satisfied with programmes that are merely a pale reflection of the status quo: they have a responsibility for offering professional leadership, for pointing the way forward.

From library and information educators, this calls not only for clearsight-edness and intellectual capability of a high order, but for cool heads: above all, we must not be panic-ed into rash forecasts about the future of libraries. The power which information technology is putting into our hands does not signal the end of library and information service as we know it today, though amongst other things it should certainly enable us to carry out such services more effectively. The promise of electronic publishing and of computer storage of full text on a large scale, though it is real enough, will only very gradually affect the key role of libraries as we know them today, and I personally see no future in which the strength of a country's library holdings will cease to be an important index to its information power and potential. To look at it in its crudest and simplest terms, it is little use producing references with the speed of light if it then takes weeks or months to produce the relevant documents. What we shall be seeing develop I would suggest, is a mixed economy in which traditional systems, often with the help of information technology, will be operating in parallel with the sort of high technology activities are now very rapidly becoming a reality: and here I would particularly mention the potential importance for the information world of the office of the future type developments which I have not doubt were touched upon last week.

With such considerations in mind I would like to conclude this brief introduction by turning to our programme this week. The sort of problems I have been touching upon - and above all the implications of rapid and fundamental change - have been exercising library and information educators world-wide. Here at this seminar we are in the fortunate position of having a panel of experts representing a wide range of very different approaches to their solution.

In very general terms the subjects on which they have agreed to speak seem to break down into two, or perhaps three groups. If you look at your revised programmes you will see there are contributions which can be described as states of the art: Dr. Cronin on the United Kingdom, Dr. Schwartz on Scandinavia, and a panel of speakers who will be presenting a case study of the situation here in Yugoslavia. Two new contributions under this head are from Costa Rica - Dr. Araya Marin, and from Zambia - Mr. Kularatne. A second group of papers is concerned in part with the state of the art but mainly seeing it as the take-off point for a look at the future. Dr. Cronin's second paper comes in this category, and is entitled Expanding Horizons; Dr. Wersig's is called Information Science Education for the 80's - as he is at the last moment prevented from attending himself, his paper will be taken care of by two of his colleagues from the German Federal Republic. From the United States Dr. Martha Dosa brings us views on Education for new Professional Roles in the Information Society; and Mr. Ben Rugaas from Norway will be talking to us about the international trend towards an Integrated Approach to the Education of Information Professionals. The third group of topics takes a look at some rather more specialised aspects. The first two of these have in addition, an international dimension - Mr. Kenneth Roberts of the General Information Programme, on Unesco's Contribution to the Education and Training of Information Professionals, and Dennis Gunton on Continuing education and training: the international experience of the British Council. Two other important specialised topics will be covered by Yugoslav colleagues: Dr. Blaževković will talk about Information Education through School Libraries, and Dr. Splichal on the Role of Information Science Education for Social Scientists.

Now it was originally planned that these three groups of subjects would be dealt with separately and in turn. However, as some speakers find that they have to return to their countries earlier than at first expected, there have had to be some changes in the sequence which was originally planned. In consequence the order in which the papers will be

presented is perhaps not so clearly developmental as we might have wished; but I am quite sure this is not a matter that will raise any particular problems.

As a conference of this sort is quite likely to throw up new topics of interest, as it progresses, and as it might in some cases seem a good thing to give such topics a rather longer airing than might be possible during ordinary discussion, we have allowed for this by leaving a little time unallocated on Friday morning. In the final part of Friday morning I shall try to sum up what has happened during the rest of the week.

That is all I have to say by way of introduction, save to make the point that with such a distinguished and highly experienced group of participants, I am sure we have a most interesting and challenging week in front of us.

PART II
YUGOSLAVIA
- A CASE STUDY

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Conference paper

LIBRARY EDUCATION IN CROATIA - STATE OF THE ART AND TRENDS

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Abstract

The paper presents an outline of the circumstances and developments which led to the introduction of library education at undergraduate level in Croatia in 1967/77. It provides an insight into the legislative framework and other factors which influenced the introduction of the present library education programme at the Philosophy Faculty of the University of Zagreb. The main characteristics of the programme, faculty body and others resources of interest for the implementation of the programme are discussed. A revision of the initial programme is considered within the field of information sciences. According to this revision and in addition to the present model of studies which leads to a diploma in librarianship, a new profile of information specialization in combination with basic library studies is expected. Such a specialization, oriented towards library problems, seeks to improve team work relations in connection with library automation and information retrieval problems. The main features of this proposed programme are given. The introduction of information studies as a new discipline will also affect the programme of library studies with some innovations in the coverage of subjects. A new postgraduate programme for library studies is being planned as a continuation of undergraduate course work. Problems involved in elaborating such an advanced programme are mentioned.

The Library Association of Croatia and the Federation of Library Associations of Yugoslavia, having both instituted special sections for library education, have shown great concern for the promotion of formal library education at various levels, and national libraries in all the republics and provinces within their competences have joined them with equal interest /1/.

In the past twenty years a number of developments have taken place that have contributed to a more satisfactory situation in comparison to that that prevailed before the early sixties. It is probably true that there are few professions where educational problems are so disputable, if not controversial, as in library education. This can be explained by the fact that libraries are social institutions, integrated in the entire complex of the social setting, in contrast to many other areas of study such as, for example, natural sciences, where the curricula must meet the needs of general knowledge. Library education, on the other hand, besides universal knowledge must also reflect to a certain degree the image of the whole library structure of the country where it is implemented. Even the elements of "universal knowledge" are to-day disputable, and it is not surprising that a variety of approaches have been adopted by educators in different countries /2/ though they are all conditioned by generalized facts such as, for example, the growing specialization of knowledge, more intensive use of libraries as a result of permanent education, growing information needs, presence of nonliterary forms of documents, rationalization of library operations, establishment of information systems, automation as well as external pressures for efficient communication systems. Under such conditions it is certainly not an easy task to set up education objectives, still less to develop curricula which would meet both ends.

Before the introduction of regular library education at the Philosophy Faculty of the University of Zagreb in the academic year 1976/77 two developments of interest in the sphere of higher education took place: 1. the introduction of postgraduate studies in librarianship at the University of Zagreb in 1961. (It is not necessary to point out the merits of these studies, since they are the topic of another paper) 2. in the period between 1965-1976 library studies were introduced in combination with other general education area studies (native language, foreign languages, or other subject fields) in Rijeka, the two year course leading to a diploma in Senior Library Assistantship (viši knjižničar).

Both developments have affected the library scene because for time they represented the only such educational programmes run in Croatia, though each had different objectives. The postgraduate programme

prepared students for library responsibilities chiefly in academic and special libraries, whereas the programme in Rijeka prepared library personnel at the first level of higher education for positions in all types of libraries. That programme was discontinued due to the reorganization of the Pedagogical Academy and its transformation into a Pedagogical Faculty in Rijeka.

At the same time it must be noted that, long before any form of library education was institutionalized - according to legal provisions enforced in 1928 and stipulated in later Library Laws - all librarians were, and still are, obliged to pass a state professional examination after a period of training on the job (at present one year) /3/. The state examination consists of a written paper whose core subjects consist of: cataloguing, classification, bibliography, library administration, history of libraries and the book, book preservation, documentation services, legislation, and competence in one foreign language. The requirements for this examination are: completed studies at the second level of higher education at any faculty within the university system and at least one year of training on the job in any type of library. Due to such a legal framework, graduates from various faculties have always been attracted to the profession and, in the majority of libraries, subject specialists have been an important asset. As the latest Library Law, passed in 1973, is still in force, there are nowadays two possibilities to enter the profession. The first is to enroll in the programme of library studies, i.e. to follow a formal education at undergraduate level at the Faculty, or to be accepted by a library as an entrant who will either take up formal studies or qualify by sitting the state professional examination. The supply of librarians with a formal diploma obtained from the Faculty, however, is still too small to meet the demand, in particular in the provinces.

In view of the general library situation in the Socialist Republic of Croatia, the demand for qualified librarians at various periods has always exceeded the supply offered through formal educational programmes. Since 1971 the dissatisfactory situation has given new impetus to the expansion of possibilities of library education by introducing a new programme at the second level of higher education. This programme would gradually raise the standards of libraries on a larger scale by qualifying librarians, prior to them accepting library responsibilities, only on the basis of their respective graduate education.

The number of libraries in Croatia, their stocks, general development of library operations and services, and size of staff were taken into consideration as relevant factors in comparison with the expectations placed on them to serve as educational, research, information and cultural centres. According to the latest official statistics /4/, it is worth noting that the library network in Croatia comprises 395 research and special libraries with stocks totalling 6,385.000 volumes, 284 public libraries totalling 3,676.000 volumes, and 2,422 school libraries /5/. Within the group of research and special libraries alone, the stock of the National and University Library exceeds 2,000.000 volumes. Roughly 25% libraries have stocks ranging from 10.000-50.000 volumes. Within the spectrum of public libraries, 50% are stocked with over 5.000 volumes, though the public libraries network in Zagreb exceeds 1,000.000 volumes. The highest concentration of stock, in Zagreb, is due to the fact that the city is the largest educational, research and cultural center in the Republic. Among the four universities in Croatia, the student population of Zagreb represents 75% of the total student body of 42,949 students and a faculty body of 3,424 distributed among 51 faculties (29 in Zagreb). Also it may be illustrative to mention that Yugoslavia's publishing activities rank relatively high, with 10,535 published works in 1982.

Many are understaffed or in need of librarians. In the face of such a situation it was felt that one of the first contributing factors in remedying the situation was to put emphasis on education, i.e. to provide librarians professionally educated before they embarked on library careers.

Many a dilemma as to the profile of the librarian vanished due to the traditional presence in libraries of graduates with various subject backgrounds. Thus, th aspirations on which library education was to be founded were as follows: 1. library education should be integrated within the free educational system at the second level of higher education, in contrast to postgraduate education which in general is offered against fees contributed either by the student or his parent library. 2. entrance requirements must be either a faculty diploma or at least 4 semesters of background studies which must proceed paralielly with complementary library studies. 3. Library studies must be open to all students irrespective of their background studies at the university. 4. Students should be educated at a general level and be competent to accept responsibilities in all types of libraries /6/.

The above-mentioned guidelines were adopted by all relevant authorities and a curriculum designed largely on the basis of previous experiences in the domain of state professional examinations with certain modifications. These could be considered as evolutionary in nature but revolutionary in terms of professional education. Thus the curriculum content includes the following core subjects: library catalogues in theory and practice, theory of classification and classification systems, bibliographical and reference services, foundations of librarianship, library administration, additional subjects such as library history and history of the book,

book conservation and microfilm techniques, introduction to information theory, introduction to automated information systems, two foreign languages, and one of the following electives: public libraries, special libraries, school libraries or slavic paleography. Each student has to submit a final paper on a topic of his choice.

Students are admitted on the basis of a successful study record in their background studies. Final selection is made by a written test and interview. Due to the numerus clausus 30 students are admitted every year. Studies last four semesters and include 750 hours of lectures and laboratory work, the ratio between these being 2:1 or 3:1. In 1976 a Chair of Librarianship was established and in 1978 it was integrated in the new Department of Librarianship and Socio-Humanistic Studies, recently renamed the Department of Information Sciences. At present the faculty attached to the Chair consists of 3 permanent and 5 honorary members of staff with advanced degrees and professional library qualifications, and has further support from members of other departments.

It seems still too early to evaluate the benefits and certain shortcomings of the present arrangement, but experience allows several observations:

1. the opportunity to enroll as regular students of library studies has so far attracted a considerably larger number of candidates than can be admitted and so permits satisfactory selection.
2. the majority of candidates come from the Faculty of Philosophy, which allows 36 combinations of background subject studies, and 25% are absorbed from other faculties, typically the Faculties of Educational Studies, Political Sciences and Sciences.
3. A shift has been noted toward starting library studies in the 7th semester or after graduation.
4. In order to facilitate attendance and minimize collisions with subject area studies, courses have been distributed in the afternoon, although in a large faculty some clashes seem unavoidable.
5. Each year a number of librarians in want of formal qualifications join the courses and have to adjust to the set timetable because part time studies are not forseen by the University.
6. According to legal regulations students are obliged to sit all oral examinations set for the first year of studies before proceeding to the second year. Most students comply with this rule, but fail to complete their studies in due time unless they have previously graduated in their main subject/subjects.
7. The study facilities are still inadequate with respect to technical equipment, space, and the library collection which has been set up for students and the teaching staff.
8. The number of permanent teaching staff is so far not in accordance with standards for library schools, especially in regard to new developments in the curriculum which are under discussion.

It is worth noting that, according to Unesco's classification of higher education, the educational level presented is between zone I and II. This is because the requirement for a diploma of library studies is conditioned by a previously completed four year diploma in one or two subject areas. According to the Educational Law valid in Croatia since 1982, library studies are classified at level VII/1 and postgraduate studies at level VII/2.

In view of the changes and new demands on libraries a revision of the curriculum has been foreseen which, it is expected, should up-date the curriculum by introducing new subjects and proportionally augment the total number of hours to 900. These subjects are: information and communication theory, semiology and communication, statistical techniques, introduction to programming, one programming language, psychology of the user and reading. Among the electives two additional subjects have been interpolated, namely academic libraries and sociology of the book and reading.

The mentioned revision is to a great extent the reflection of another educational model in the field of information science which has been designed for information science studies. In accordance with a new systematization of education in the field of information sciences a compulsory core of subjects in that domain has been adopted at university level, allowing several further streams of studies, one being librarianship. The underlying philosophy of such an integrated curriculum with emphasis on information science studies, where the field of application is libraries, seemed justified when envisaged from the point of view of library needs for automation and team work of information specialists and librarians.

In compliance with the Statute of the Philosophy Faculty in Zagreb the implementation of such a curriculum would be shaped as follows: the students who follow 2 subject courses (one major course takes up 50% of their time within the overall four years of study) would devote the other 50% of their time to information science studies as a second major, with library studies in the 3rd and 4th year accounting for 25% of their time. In comparison with the first model this curriculum is restrictive in so far as it is limited only to students from the Philosophy Faculty. It is yet not known how many students will respond.

Postgraduate studies at the University of Zagreb in librarianship have a tradition of over 20 years, but since undergraduate studies were introduced it has been recognized that a reconstruction of their curricu-

lum is necessary. In compliance with the Educational Law, essential formal competences in the profession are imposed as a requirement for admission to Master's Degree courses. Each Faculty may specify procedures and additional criteria for admission. The master degree programmes may lead to the degree Master-Specialist or Master of Science, depending on the design of the curriculum and its duration. The first lasts 1 1/2 years, the latter up to two academic years. General admission requirements include: competence in at least one foreign language, and the completion of correspondent higher studies (second level) VII/1 degree. As correspondent studies are considered studies for the gaining of a VII/1 degree, they represent an essential element of advanced study in which the candidate wishes to enroll.

A year ago a draft for the curriculum of a Master Degree in Library Science, considered a subfield within the complex of information sciences, was designed. The approach to such a curriculum was: 1. to establish specific admission requirements which each candidate should meet; 2. to develop a curriculum at an advanced level which forms a continuation of basic library studies. It has been proposed that evaluation of candidates for admission be based upon the following criteria: completion of library studies at level VII/1, 2 years of library experience, high study credentials, competence in 2 foreign languages - one of them English, a letter or recommendation from the employing institution.

The design of the curriculum posed a number of questions relevant to the goals, to its content (scope and depth), theoretical versus practical aspects, number of subjects and their grouping, especially those in the domain of information science. The draft of the curriculum accomodates compulsory and elective subjects, purely theoretical, supporting ones, and a group of mixed subjects. Since this curriculum was designed on the foundations of knowledge gained though the curriculum prior to the innovations which have taken place by introducing additional subjects, it can be presented only as an illustration of its intentions and scope, bearing in mind that it suggests further harmonization. It has been conceived as a 200 hour programme over 4 semesters, the 4th semester being assigned to the preparation of the thesis.

According to the draft the component subjects for study are as follows:

1. *Library and information systems (General Part)*
   (one of the specialized parts a/ to d/ elective)
   - *a) university systems*
   - *b) special libraries systems*
   - *c) public libraries systems*
   - *d) schools libraries systems*
2. *Methodology of scientific work*
3. *Quantitative methods in librarianship*
4. *Classification systems (library and bibliographical) -advanced*
5. *Logic*
6. *Information theory*
7. *Semiology (in relation to librarianship)*
8. *Information retrieval languages (elective)*
9. *Sources of information (general part)*
   one of the following specialized parts required
   - *a) in the humanities*
   - *b) in social sciences*
   - *c) in biomedicine*
   - *d) in technical sciences*
10. *Sociology of users and libraries*
11. *Library automation*
12. *Library information systems*
13. *Library history of Croatia*
14. *one of the electives a) to c) required*
    - *a) organization of the music collection*
    - *b) organization of the graphic collection*
    - *c) organization of the cartographic collection*
15. *Slavic paleography (elective)*
16. *Textual criticism (elective)*
17. *Master Thesis*

It is understood that a great deal of individual study and reading is expected from the students. The master thesis of about 100 pages should give proof of detailed knowledge in an appropriate area of librarianship and information science, sufficient for the postgraduate to perform in a specific library situation at an advanced level.

Among the many issues which surround the curriculum, one is to establish how the subjects are operationally introduced in the classroom and the next, to provide for feed-back from students on the quality of education, which - again depends not only on the curriculum but also on the teaching staff.

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Conference paper

AN APPROACH TO EDUCATION IN INFORMATION SCIENCES AT UNIVERSITIES IN CROATIA

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Abstract

Information sciences are defined as "All sciences which deal with systematic study of processes of emission, collection, selection, evaluation, processing, structuring, organization, storage, retrieval, transmission, dissemination, interpretation, use and protection of information; and with processes of social communication in all its forms". Core, methodological and applied disciplines are identified. Education in this field is developing in three directions: (1) general education in information sciences for all students (introduction to methods and techniques for users and generators of information), (2) additional education in information sciences for professionals in other disciplines (e.g. in librarianship) and (3) education of professionals in information sciences (up to now two profiles and programmes have been defined: "informatologist" and "professor of information sciences". The first programme offers the study of (a) information systems design, (b) communicology, (c) information and documentation whilst the second offers (d) librarianship, (e) museology, (f) archivistics, (g) teaching in information sciences). The main characteristics of these curricula are analyzed. The impact of new technology of information storage, processing and transfer to education in information sciences is discussed and some suggestions for this field's are offered for future development.

Modern societies are moving towards the informatization of all sectors of life. The informatization of society can be defined as "the substitution of work, energy, resource, and capital intensive processes with information intensive processes". This results in an increasing dependence of the society as a whole on the production, transmission, processing, storage, retrieval and use of information. On the other hand, automatization and robotization of the production sector liberates human work from simple, routine operations; creation and maintaining of data bases, and collective memories liberate the human brain from memorizing facts and numbers (i.e. knowledge created in the past) and direct it toward creative thinking, and problem solving in general. The birth is soon expected of new "primary activities", a sector in the division of information labour, within which data bases are created, while secondary sectors will use and apply knowledge, and look for new relations between the existing facts.

The greatest challenge of our time is to enable informatization and at the same time to adapt to its various effects; this asks for great and important changes in the educational system with regard to the content of education, as well as with regard to the education methods, and to the use of modern information technology in teaching in particular.

In Croatia in 1981 a demand was expressed for constituting information sciences as a scientific field (discipline). This implies the recognition of the field of information sciences as one among 36 scientific fields in the family of sciences. The whole list is obtained by taking into account all subjects relevant in research and education. Formally, somebody (i.e. an institution) can organize a four year programme and grant Ms and PhD degrees only in recognized fields.

The main criteria for the constitution of information sciences as a new scientific field were:

- *the importance of information handling for the socio-economic development of the society,*
- *the existence of the "critical mass" of research workers and university teachers active in this field (at least 15 scientists with a PhD degree),*
- *establishment of research projects in this field,*
- *publication of a specialized journal and various other publications.*

All these criteria were satisfied even before 1981. According to some assessments in Croatia, there are more than 10,000 people engaged in jobs which can be defined as information processing in the broad sense of this term.

The proposal for the constitution of information sciences as a scientific field defined information sciences as "all sciences which deal with systematic study of processes of emission, collection, selection, evaluation, processing, structuring, organization, storage, retrieval, transmission, dissemination, interpretation, use and protection of information; and with processes of social

communication in all its forms". In this context, at the University of Zagreb, there has been a continuing discussion about the interdisciplinarity of information sciences. It is quite clear that one can talk about economic, legal, ethical, sociological, linguistic, psychological, technological and other aspects of information sciences, but one can also talk about the application of information sciences in all sectors of human life, as different from one another as medicine, geography, literature study and management (thus, new disciplines are born bordering between the main subject and information sciences).

There are several arguments in favour of constituting information sciences as a scientific field, in favour of the development of information science education programmes to deal with different types of information handling (operations), various levels of content reduction in the transmission of information from its source to its user (informative level: mass media, information science level - scientific information, informatics level - computer processing) and to take into account the changing focus of interest, i.e. information carrier in different disciplines (object in museology, document in library science and archivistics, data about a document or an object in information science in the narrow sense of the term, text in linguistic disciplines, etc.).

These arguments are as follows:

1) Formulation and fast development of new information science laws, e.g. statistical distributions, rules, etc. which deal not with the subject of information but with the production, transmission, processing and use of information. Some of these laws originate from other fields, e.g. thermodynamics, physics, mathematics, linguistics, etc. but recent years have witnessed a number of laws generated within information science itself.

2) Application of specific research and other methods, techniques and working tools. A decade or two ago, nearly all methods in information sicences were taken over from other fields, very often just as analogies, without any change in their usage of fundamental categories. From sociology, different methods of questionnaire and query were used for the assessment of the information needs of users (usually without great success, because the majority of users cannot or do not know how to express their needs precisely). From economics, cost/benefit analysis was used for the evaluation of information value, etc. Today, a distinction can be made between specific methods formed by the adaptation of existing methods from other fields to the laws of information science, and quite new methods which tend to be related to information theory, science on science, communication theory, bibliometrics, and to computer data processing.

The important point to note is that professionals in other disciplines who just use the methods and techniques of information science are not therefore those scientists and researchers needed to develop information sciences.

3) The third argument is in some way connected with the second and lies in the importance of new technologies of information processing. New information technology requires specific knowledge which is irrelevant to the content of information. If one looks at the range of operations an information specialist is supposed to perform, more and more of them involve knowledge and skill in information science, e.g. the problems of input format, indexing techniques, structuring of data, search strategies, evaluation of information requests, text processing, print-out of results, etc.

At the same time, "classic" operations which were very much related to the specialization in a particular field, like classification or abstracting, have decreased somewhat in importance. In many information centres and services different subjects prevail and very few services can afford to employ subject specialists for all of the disciplines in their scope of interest.

Unification is the growing trend in the process of information transfer, e.g. primary journals are edited in such a way that articles (abstracts) can be directly used by secondary journals or data bases, and a lot of operations which earlier were performed by special services are now done by authors (e.g. abstracting), by the editorial staff or by the publisher (cataloguing in progress).

4) Perhaps, the most important role of information science is to bridge the gap (manifested in the contemporary information crisis): between a growing specialization of research, written knowledge, organizations, education process, etc. on the one hand, and an increasing inter - or multidisciplinarity of challenges facing mankind. Information scientists working as intermediaries between creators of sources of information and information users need to overcome the gap between the logic of narrowing interest on the one hand and responses to the problems which require interdisciplinary knowledge on the other hand. The trend toward mission oriented centres and systems that replace discipline oriented centres and systems is one of the consequences of this development.

In the same way, information science should narrow the gap between the two cultures, the technical and the humanist. Finally, information science should play a role in bridging the gap between developed and developing countries. The contemporary situation clearly shows that, to borrow an example from biology, ontogeny is not always a short recapitulation of phylogeny. In other words, developing countries need not follow all the stages developed countries did in

their own development of the information sector. They can avoid some. For example, they need not develop huge computer systems and networks in the age of micros, or process magnetic tapes for SDI in the age of the on-line.

Let us now examine the curriculum problem. After the decision to constitute information sciences as a scientific field (at the end of 1983) work was started on the identification of the core and supporting and methodological disciplines. Finally, a list of courses was drawn up, forming a common programme on which all studies in information sciences were to be based.

These core disciplines are:

1. Science on (properties and behavior of) information
2. Systems theory
3. Theory of information systems
4. Decision making theory
5. Communicology (communication theory)
6. Structure and organization of information
7. Data base design
8. Information and documentation systems
9. Classification theory
10. Semiotics

The supporting methodological disciplines are:

1. Organization theory
2. Computer system architecture
3. Computer networks
4. Operational systems
5. Mathematics
6. Programming and programming languages
7. Research methods in information sciences
8. Statistics
9. Operational research
10. Political economy
11. Economics of information activities
12. Social psychology for information professionals
13. Law for information professionals
14. English for information professionals

Etc.

(These disciplines are usually based on knowledge from other fields of science).

The list of common programmes contains course numbers 1. 2. 3. 5. 6. 7. 8. 9. from the first list and 5. 6. 8. and 12. from the second list.

Today at the University of Zagreb there are four types of information science education programmes offered. Each of these programmes, as is evident from their names, has a very specific role.

1) first there is general education in information sciences designed for all students. The aim is to offer a basic grounding on the methods and techniques of information usage and at the same time to instruct future authors or creators of information on how to design, prepare and present their research results. In 1982 the University of Zagreb issued a recommendation that all Schools or Faculties should offer the course "Introduction to scientific and technological information" in the first year of study. The programme of this course covers 10 topics:

1) Notion, role, social context, history and development of scientific and technological information (STI)
2) Determination and evaluation of users' information needs
3) Production of the STI and the role of authors
4) Information transfer, i.e. publications and their typology, conventional and nonconventional media
5) Organization of the information infrastructure and the typology of services
6) Information retrieval: selective dissemination, current awareness and retrospective search
7) Criteria for selection, compression and organization of information
8) Conventional and nonconventional equipment for information handling
9) Utilization of the STI in research and in the production sector
10) Methods of evaluating the STI.

The topics are presented in the form of lectures and through practical work which takes place in libraries, information centres and other institutions of information infrastructure. The latest data show that approximately half of the Departments at the University of Zagreb i.e. 23 out of 47 are organizing courses of this content under the same or similar title.

2) The programme of additional education in information sciences is designed for all professionals who work in information services but were educated in other fields. It should provide knowledge in information handling and a diploma degree to those people who want to make a career in the information sector. It should also serve as a programme of parallel education for students majoring in other fields but interested in information analysis work in these specific fields. In other words, this programme provides knowledge for work in specialized or research libraries and documentation centres and for other tasks for which knowledge of the basic discipline is more important than knowledge of information science. In librarianship the first such programme started seven years ago. In the meantime the possibility has been offered of additional studies in archivistics, museology and informatics in social sciences and humanities.

3) The four-year undergraduate programme in information sciences proposed is quite a new idea. The development of such programmes is connected with the constitution of information sciences as a scientific field, and although the curricula have been designed, the first generation of students has not yet been enrolled. The Scientific and Educational Council of the

University of Zagreb discussed the two profiles of professionals the programmes should produce:

1. Informatologist (the name derived from the term "Informatology") to specialize in one of the 3 main fields: information systems design, communicology, information and documentation activities;
2. Teacher of Information Sciences with the option of 4 fields of specialization: librarianship, museology, archivistics, visual and verbal communication and general (with no specialization).

These four-year programmes consist of a common programme in the first two years of study and a specialization in the third and the fourth year. The programme for the Informatologist is a one subject study and the programme for the Teacher of Information Sciences is a two subject study. This means that a student who wants to become a teacher of information sciences can study information sciences in addition to another discipline (one among 18 other disciplines ranging from sociology to literature study, from linguistics to phonetics, etc.).

The analysis of the content of the curriculum proposed is based on the division of subjects in Prof. Saunders' "Guidelines for curriculum development in information sciences" (taken from Shur's OECD report "Education and training of information specialists for 1970s").

Differences in curriculum content between the specializations within each profile differ by approximately 20 per cent, the two most representative specializations within each profile analyzed as: Informatologist specialized in the design of information systems and teacher of information sciences (general).

TOPIC	NUMBER OF HOURS	
	Informatologist	Teacher of information sciences
1) GENERATION AND USE OF DATA BASES		
1. Generation and use of data bases	90	30
2. Human communication	270	90
2) DATA BASES AND THEIR CHARACTERISTICS		
1. Data base sources and resources	90	-
2. Macro and micro characteristics of data bases	-	-
3. Natural and formal languages	180	165
3) ORGANIZATION AND DISSEMINATION OF DATA		
1. Data acquisition, description, compression	90	30
2. Taxonomies, classification of data	60	-
3. Indexes and indexing	-	-
4. File structure and organization for retrieval	90	-
5. Data transmission, communication, dissemination		-
4) INFORMATION STORAGE AND RETRIEVAL SYSTEMS		
1. ISR systems analysis and design	150	60
2. System/system and system/man interfaces	-	-
3. ISR systems and systems networks	90	30
4. ISR system environments	60	-
5. ISR system operation	90	60
5) THEORETICAL AND TECHNICAL TOOLS		
1. Mathematical foundations	240	90
2. Research methods	-	-
3. Operational research	90	30
4. Statistical methods of research	90	30
5. Management principles and techniques	90	-
6. Technical equipment for ISR systems, characteristics and use (including computers)	195	30
6) OTHER	apr. 1000	2800

In terms of course hours it is clear that the programme for the first profile lays emphasis on the subjects dealing with human communication, formal languages, analysis and design of information storage and retrieval systems, mathematical foundations and technical (mainly computer) aspects. In terms of course hours these five topics account for about 50 per cent of all analyzed content. The programme for the second profile also emphasises programming languages, while other contents are given equal treatment. Problems of data bases and the organization of retrieval have not been given enough coverage.

4) Current development in the conception of a common programme of information science studies which proceeds from the so-called "core disciplines or subjects" and offers an option among different disciplines or professions based on document and information handling has been influenced mainly by the programme of the Postgraduate Study of Librarianship, Documentation and Information Science developed by

Professor Težak some twenty years ago at the University of Zagreb. The new programme of this postgraduate study, which offers 5 fields of specialization (archivistics, library science, informatics, communicology, museology), is based on four groups of courses:

common courses
required courses for each field of specialization
elective courses for each field of specialization
common elective courses.

Common courses include: research methodology, informatology, social aspects of information work.

Required subjects in archivistics are: evaluation of archive records and collections, information systems for archive collections, research in archives in Europe and in Yugoslavia. In library science: comparative analysis and evaluation of library and information infrastructure and systems, evaluation and organization of information sources and carriers, data structuring and retrieval systems, research methods in library science, classification and indexing theory. In informatics: design and development of software, data bases design, organizational system of associated labour. In communicology: systematic communicology, communicology of self-management system, mass communication models, methodology of communication research. In museology: general museology, special museology.

There are 18 common elective courses, while the number of electives in different fields of specialization varies. Among the common electives are: structure of cultural information, text processing, protection and security systems, legal aspects of information, mass communication systems, etc.

Plans for future development of this postgraduate study include thematic orientation of each generation of students, e.g. one year management problems will be the focus of interest, the next year research methodology, and so on with other topics. Thus, students will decide which year to enroll in, according to their professional skills and interests.

Modern society is rapidly becoming an information society. The entire structure of information processes in general and the ways of receiving messages in particular are changing. The real effects of the information technology revolution on our everyday life have yet to be realized. The integration of different - up to now completely separate - information activities and sectors (for example, the videotext or viewdata system which integrates different levels of content reduction, from news to information, and different media and different types of information: general, business, cultural, leisure and other information which exist together with scientific and technological information) will create different patterns of information use. Unified communication channels will be available offering selection on the spot, in the house or in the office. From different types of news and information one will select the type of information one wants, or needs, using the same rules used today in the sector of scientific information in communicating with data bases. At the same time we shall be able to choose the medium which we want the message to be in, whether we shall read it on the screen or on the paper; we will be able to produce our own newspapers through our very own selection of news on the home printer, or we shall just listen to information from the speaker (voice response system).

If we let our imaginations carry us even further, we can anticipate universal headphones or earphones, a small receiver inserted in each ear which will enable individual contact of different users (on different wavelengths) with a home information utility or home information machine.

In view of all these changes, the education of information science professionals is an education effort for the future, for the world which is changing. Educational programmes should not be the result of the current situation in the information institutions in this country. Problems cannot be resolved by simply adding new subjects to obsolete and inadequate programmes. The next five or six years are crucial in testing this new approach to information science education and offer a big challenge to a generation which is just now preparing itself for the important and promising role of information science educators.

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Conference paper

A DRAFT FOR ORGANIZING A POSTGRADUATE COURSE IN INFORMATION SCIENCE AT THE UNIVERSITY OF SKOPJE

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Abstract

With regard to the rapid growth and expansion of library and information science (by following the information explosion, by being symbiotically tied to the information technology and by being a constituent of the quaternary /knowledge industry/ sector), the introduction of an Information Science Course, nowadays, has become more complex than ever.

The efforts made in organizing a Postgraduate Interdisciplinary Course in Information Science at the University of Skopje under rather unfavourable conditions (the lack of anything of its kind at any level of professional education so far, a lot of gaps in the other supporting and related fields within the system of higher education, the current economic crisis which has hit education through severe cuts, the generally very poor and underdeveloped library and information infrastructure, etc.), are presented.

The approach to the setting up of a course is planned to be made through a research project sponsored and financed by the National Research Council. A draft for the project is given, whose task - among other things - is the production of a specially tailored curriculum. This will consider and balance up-to-date achievements in the field, world-wide practices, specific needs of the country and the actual possibilities of the University of Skopje.

The rapid growth and expansion of library and information science has made the introduction of an Information Studies Courses a very complex task. The efforts made for organizing a Postgraduate Interdisciplinary Course in Informatics at the University of Skopje, under rather unfavourable conditions, are presented here, as well as the approach planned through a research project sponsored and financed by the National Research Council A draft of the project-proposal is given which, among other things, has as its task the production of a specially tailored curriculum respecting and balancing the up-to-date achievements in the field, world-wide practices, the specific needs of the country and the actual possibilities of the University of Skopje.*

The need for trained manpower with a broad professional education in the field of librarianship and information work has been felt for quite a long period in SR Macedonia but so far, for many reasons, virtually no such training has been introduced at any level within the educational system of the Republic. The ever-increasing number of complex problems concerning library and information work have been dealt with on a more or less amateur basis which, in the long run, has resulted in both a very unsatisfactory situation and a number of other problems. The spectacular expansion of information science, the progress made in information processing, transfer and implementation, and accordingly the enormous, multisignificant impact this has on each society in the world have served to make the situation in SR Macedonia even worse.

The Commission for Informatics and Statistics (CIS) of the National Research Council of SR Macedonia, which is responsible for the System of Scientific Information and its infrastructure in the Republic, is, through its work, in a better position than other organizations to see how the gap in the field of librarianship and information work between the developed and developing countries (and even within Yugoslavia between the developed and developing republics and autonomous regions) is constantly widening. Library and Information Science is following the explosion of information, trying to harness it and bring it to the users. In so doing, through tying itself to informa-

*National Research Council = Selfmanaging Community of Interest for Scientific Activities

For the present address of the author see p. 132

tion technology, Library and Information Science has developed significantly. Accordingly, it has become a very important constituent part of the quaternary-knowledge industry-sector and, hence quite important in the general constellation of the world economy and in each individual country.

Recognizing all this and showing deep concern, the Commission for Informatics and Statistics has pointed out that the establishing and developing of professional education for information services is of utmost importance to the development of the services themselves. This recognition led to the invitation of Prof. W. Saunders from Sheffield University, U.K., to visit SR Macedonia to advise on the setting up of training facilities for preparing personnel for the science and technical information services of which SR Macedonia is in obvious need. [a/]

Trying to follow and carry out prof. Saunders' suggestions and proposals has proved to be very difficult, in particular because in the meanwhile, due to the economic crisis which has quite seriously hit the educational system, a lot of changes and a general worsening of the situation has taken place.

However, regardless of all this, in pursuing the idea of establishing a Postgraduate Course in Information Studies, the CIS received a very serious response from the University Center for Mathematical and Technical Sciences [b/] (UCMTS) and, within it, from the Faculty of Electrical Engineering (which is able to provide some of the necessary teaching staff and good computer facilities). It should be mentioned that this co-operation is in accordance with Prof. Saunders' suggestions.

The ground had been already prepared at the UCMTS by the newly established Republic Administration for Informatics in the course of its encouraging the introduction of 'informatics education' at all higher levels of education within the Republic. The Administration in this case has made efforts to pool the teaching staff from various faculties that offer some 'informatics subjects' at undergraduate or postgraduate level, with the purpose of combining the interests of different faculties in the field of informatics in achieving a kind of concentration of awareness and knowledge in the field. On the basis of this, a working group [c/] was set up, which in due course was given official recognition by the Council of UCMTS. The group was assigned the task of preparing a research-project-proposal for the organization of a Postgraduate Interdisciplinary Course in Informatics at the University of Skopje.

Leaving the problem of introducing education in Library and Information Science at undergraduate level to the National and University Library and other responsible authorities, the CIS has concentrated its efforts on participating in this working group, tackling the general philosophy of the importance of informatics education with regard to the impact that information and information technology has nowadays on almost all levels of human activity.

So far a very rough plan of the envisaged Postgraduate Interdisciplinary Course in Informatics has been produced. It is planned to have three branches:

1) Informatics in the Natural, Mathematical and Technical Sciences;

2) Informatics in the Socio-Economic Sciences and the Humanities;

3) Library and Information Science.

It is planned that these three branches will share a common core of subjects (4-6), will each offer separate subjects (3), and will share a core of several electives from which the students will have to choose (2) subjects.

A lot of effort will be needed to create a programme which will be realistic in terms of the very modest available resources in the Republic and yet try to achive quality standards. This means that there are many open questions, the right and valid answers to which will be sought through research work which will encompass:

- clarification of the educationl programme policy and objectives of the course as a whole as well as of each individual branch;
- the scope and range of the course contents;
- the nature of educational methods;
- design of the curriculum to respect and balance up-to-date achievements in the field, world-wide practices, and the specific needs of the Republic;
- detailed elaboration of the content of each subject in the curriculum and their interconnectedness in answering the common goals of the course and its branches;
- definition of mechanisms for evaluation of the course contents so as to keep them under constant review;

a/ With the help of the Federal Commission for the System of Scientific Information in Yugoslavia, the Yugoslav Commiittee for UNISIST, and of UNESCO, Prof. Saunders visited SR Macedonia in 1982. Prof. Saunders produced a comprehensive report which was published by UNESCO as a restricted technical report under Ser. No. FMR/PGI/82/157.

b/ The University of Skopje "Cyril and Methodius" consists of five university centres encompassing faculties of related disciplines.

c/ The working group is composed of representatives from the Faculty of Mathematics, Faculty of Electrical Engineering, Faculty of Mechanical Engineering, Faculty of Economics, Republican Administration for Informatics, National Research Council (in the future work of the party, representatives from other faculties will be included or consulted in keeping with the interdisciplinary nature of the Course).

- providing the most appropriate modes for financial support of the course;
- solving the problem of provision of the right calibre and sufficient number of teaching staff (SR Macedonia in this respect faces an almost total absence of qualified indigenous teachers, the solution of which will most probably be sought through the obtaining of expatriate teachers);
- using as laboratories, and closely cooperating with, the Library of the Faculty of Electrical Engineering, the libraries of the UCMTS faculties, the National and University Library (in particular its Referral Center and Librarianship Development Department); also in finding a model of how to pool together the existing relevant books and journals in the libraries of SR Macedonia so to form a core of back-up literature to the course, and of how to complement this by an additional chosen core of new literature with enough copies of key textbooks and other teaching materials to satisfy the needs of both the students and teachers;
- finding out where the students will be recruited from and establishing the actual socio-economic justification of their attendance (i.e. needs and possibilities for employment, appropriate benefits of the profiles produced by the course). The hypothesis is that the students will be recruited from the library and information infrastructure and from the research & development departments in industry.

The National Research Council Commission for Informatics and Statistics is in fact a body of the NRC Assembly, has pointed out to the Assembly on several occassions that the quality of research work heavily depends on the quality and efficiency of the STI services. In this sense, since the National Research Council will act as a sponsor to the research project, it is in its own particular interest to see that this course, through its interdisciplinarity and strong research orientation, will contribute to:

- a better understanding of the properties and structures of information and information transfer;
- a deeper understanding of the economic and other impacts that information and information technology have on the development of the society.

It is expected, particularly by the third branch of the Course and the electives, that special attention will be paid to:

- an improvement in the Information and Library infrastructure of the Republic's education, research and economic activities;
- knowledge industry aspects;
- techniques of exploiting knowledge as a resource;
- the role of information, particularly of scientific and technical information, as an input to production and as a product;
- technology transfer problems.

The National Research Council, having as one of its concerns the training of young research manpower through postgraduate study, would also like the research project to design this course as a general model of advanced organizing of postgraduate studies for other disciplines at the University of Skopje (in particular with respect to the NRC policy of relating education - research - economic activities) in order to achieve greater utilization of the research results.

The final form of the research-project-proposal will be defined according to the requirements of, and conditions laid down by the NRC of SR Macedonia while the research team will be composed of, besides researchers from SR Macedonia, researchers from other republics (most probably from SR Croatia which has unique Yugoslav experience in Library and Information Science education) and from the U.K. (preferably Sheffield School because of already-established links).

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Conference paper

POSTGRADUATE PROGRAMME OF LIBRARIANSHIP, DOCUMENTATION AND INFORMATION SCIENCE AT THE UNIVERSITY OF ZAGREB

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Abstract

Pre-requisites for the establishment of a postgraduate programme in librarianship, documentation and information sciences (LDIS).

Božo Težak's conception for the organisation and effectuation of the postgraduate programme in LDIS. Stages of the development of the courses over the past twenty years.

Lecturers, attendants and participants in the effectuation of the postgraduate programme.

The results of the postgraduate programme.

The opinions of eminent experts about the programme. Present state and future projections.

Three courses were legalized by the High School Education Acta and became effective in the academic year of 1960/61. The first and the second were offered at under-graduate level and the third at post-graduate level. Professor Dr Božo TEŽAK (Varaždin, 1907 - Zagreb, 1980) undertook the organization and realization of the post-graduate programme of special librarianship (1) within the framework of the Faculty for Natural Sciences and Mathematics (PMF) at the University of Zagreb where he was the full professor of Physical Chemistry.

Professor Težak gained knowledge of scientific documentation both through his work and ideas and by participating in the work of reknown world organizations and societies in the field, such as the American Documentation Institute (a member since 1953), the ASLIB in London (member from 1953), the American Society for Information Science and Current Abstracts of Chemistry and Index Chemicus in Philadelphia where he was a member of the Editorial Advisory Board (2).

Since 1964, this study has been known as the Centre for the Study of Librarianship, Documentation and Information Sciences - CSLDIS. It was formally recognized at the same time as an interdisciplinary post-graduate programme in the joint organization of the Faculty of Natural Sciences and Mathematics, the Faculty of Electrical Engineering, the Faculty of Philosophy and the Faculty of Medicine at the University of Zagreb.

Already then, in 1964, the CLSDIS had an interfaculty basis although at the time, no formal or legal acts or agreements existed.

In accordance with the Regulations concerning the awarding of a Master degree at the Faculty of Natural Sciences and Mathematics, and complying with the High School Education Act, the Council of the Heads of the post-graduate programmes was in charge of approving the themes for the master theses and for the selection of the body of persons in charge of marking the theses. The promotion of the candidates to the Master degree was performed by the dean of the faculty concerned.

The post-graduate programme was, at the time of its establishment and for the few years after that, one of the first studies in this field in Europe and in the world.

During a comprehensive study tour, while studying the organization of libraries and documentation centres in many European countries (from the end of 1964 to the beginning of 1965), Božo Težak and Vladimir Muljević were acquainted, among other things, with the education of personnel in these fields. They learned that in Austria, the Federal Republic of Germany, Denmark, Sweden, Holland, France, Switzerland and Italy a post-graduate programme in librarianship and documentation, similar to the study of Zagreb did not exist. The only exception was Great Britain where in 1964, work in the Postgraduate School of Librarianship (with 23 enrolled students), in Sheffield, had begun. In the countries mentioned above, special courses lasting from a few months to a year were held, and in some of these countries under-graduate studies in librarianship, were offered. Thus, for example: in Denmark, The Royal School of Librarianship: in Holland, Nederlands institut voor documentatie en registratur: in France, L'ecole national superieure de bibliothecaire. The two-year Bibliotheksschule in Kologne was the one that probably most resembled to the post-graduate programme offered at Zagreb.

In the exchange of opinions which took place during

the above-mentioned tour, many highly-esteemeed experts were acquainted with the curricula of the CSLDIS in Zagreb. On this occasion our post-graduate study was given sound professional advice by such people as: Bjorn V. Tell, the Director of the Royal Library at the Technical High School (Kgl. Tekniska Hogskolan) in Stockholm and UNESCO's expert for librarianship and documentation, then Preben Kirkegaard, the Dean of the Royal School for libararianship in Kopenhagen, the architect Dan Fink, the Director of the Technical Archives in Kopenhagen, as well as by W.L. Saunders, the Dean of the recently founded Postgraduate School of Librarianship in Sheffield. Positive advice was also given by many experts from the big libraries and documentation centres visited during the study tour.

At the time, as regards the highschool system of education in the field of librarianship and documentation, the USA was ahead of Europe. In 1958, the Graduate School of Library Service was founded at the University of California (UCLA), and the first degree of Master of Library Science (MLS), at the university, was awarded in 1961 (only five years before Zagreb - March 1966). The Graduate School of Library and Information Sciences was founded at the University of Pittsburg, in 1962, and in 1965, at the University of Maryland, The School of Library and Information Services.

Erik Bromberg, the Librarian in the U.S. Department of the Interior in Portland (Oregon) and the President of the SLA Committee for Education, wrote an article describing the activities of the CSLDIS already back in 1966. Referring, in the first place, to the person of Božo TEŽAK, he said in his article: "I reached Zagreb for my lectures and conferences. To my consternation I soon learned that Dr. TEŽAK in 1961 had begun what is apparently the world's first two-year postgraduate course producing masters degrees in library, documentation, or information science (3).

Erik Bromberg further gave a short description of the curriculum of the postgraduate study and made comparisons with studies - that is, the curricula - of other institutions offering diplomas in information sciences. He concluded that the study in Zagreb (in 1965) had some similarities with the curriculum of the Northampton College of Advanced Technology in London, and that it conformed to the idea of traditional librarianship as evidenced in the courses held at the Western Reserve University and carried out at an inter-university level at the Lehigh University and Georgia Institute of Technology. To conclude, Erik Bromberg stated: "It may be argued that the level of sophistication of the courses in the information sciences and documentation curricula is not that of the United Stated schools."

Fighting further for an improved status for the CSLDIS, as well as for suitable premises and lecture-rooms for the postgraduate programme, Božo TEŽAK worked out a proposition for the establishment of the "Referral Centre" at the beginning of 1967.

The CSLDIS was a body within which, right from its beginnings (1961, that is, 1964) up until 1970 (when the Centre for University Postgraduate Study at the University of Zagreb was founded), the postgraduate programme in LDIS took place.

The CSLDIS was, from the beginning, a nucleus around which the idea and the conception of the present Referral Centre, established by the end of 1967, grew.

The starting, integrational basis of the Referral Centre included the International Permanent Exhibition of Publications (ISIP) and the Centre for the Study of Librarianship, Documentation and Information Sciences.

The Referral Centre itself, serves as an institutional and scientific base and an educational and demonstrative focal point for the Centre of Postgraduate Studies in the field of Librarianship, Documentation and Information Sciences (2).

The joint postgraduate study in "Librarianship, documentation and information sciences" lasted for five academic years, that is, from 1961/62 to 1965/66. Having a broad idea of the role of information and documentation, Božo TEŽAK tried to adapt this study to the needs of various professions. Thus, in the year 1966/67, Museology, up until then an option in the curriculum, became an independent course.

After the establishment of the Referral Centre, a "Resolution and temporary regulations for the activities of the CSLDIS", was put forward. The Resolution stated: "that the CSLDIS is an organizational unit of the Referral Centre with the objective of:

- organizing and realizing the postgraduate study in librarianship, documentation and information sciences and other forms of promotion in these fields."

With regard to the procedure for acquiring a Master degree, the directions laid down in the Regulation of the PMF in 1967 were valid. This condition, with regard to the position and the realization of the postgraduate programme, lasted until May, 1970, when the newly-formed Committee for postgraduate study and scientific work became operational.

The Committee reached the decision "that all postgraduate studies within the framework of the University should be treated as university studies, and that in the cases where the organization of the studies involves more faculties, it should be carried out by the University (interfaculty studies)".

According to that decision, the postgraduate programme in librarianship, documentation and information sciences was to to be realized by the University, starting in the academic year 1970/71. Following this de-

cision, a special Centre for university postgraduate study was founded withing the framework of the Rectorate.

In agreement with the Regulations concerning postgraduate study at the University, the enrollment of all candidates was done at the Centre for postgraduate study at the University of Zagreb and the Council of the Heads of Curricula took over the verification of Master of Science theses, electing commissions for the assessment and defence of the theses and the acceptance of work reports. The awarding of a Master degree was performed by the Rector, that is, by the University of Zagreb.

From its establishment in 1967, the Referral Centre was in charge of the entire organization of the postgraduate study of the LDIS.

Initiated by Professor Težak, the Referral Centre started the publication of the periodical INFORMATOLOGIA YUGOSLAVICA (2).

At the beginning of 1971, the postgraduate study in the scientific field of "Librarianship, Documentation and Information Sciences" (together with practical work) consisted of fourteen compulsory and four optional courses, and about thirty lecturers. Sixteen extra optional courses were planned. The Curriculum did not have a definite structure for all courses; "librarians and documentalists", as well as "museologists" and "archivists" were offered some special courses. The great interest of archivists in the postgraduate programme resulted in the establishment in 1970/71 of a special course for them.

Finally, the development of the need for the application of electronic devices in informatics resulted in the realization of the fourth course, that of the "Information Sciences". The four courses were established by the end of 1971 and were: 1. Librarianship, 2. Museology, 3. Archives and 4. Information Sciences and Services. The courses were accompanied by a list of obligatory subjects.

In the ensuing years, the curricula and programmes have undergone certain changes and improvements.

In the curriculum for the year 1974 further changes in the division of the courses were carried out. About sixty courses were evenly distributed to the mentioned four courses and the number of lecturers was increased to over fifty. This was the last modification of the Curriculum and programme intended for the realization of programmes at this postgraduate level. For the reason of certain regroupings, the number of lecturers changed in number. In the academic year 1978/79, 45 lecturers and experts participated in the realization of the studies.

Here are some figures demonstrating the number of students enrolled in the postgraduate study:

Joint study of the LDIS (from 1961/62 to 1970/71)... 253 students

Librarianship (from 1971/72 to 1978/79) ... 255 students

Museology (from 1966/67 to 1978/79)... 204 students

Archives (from 1970/71 to 1978/79) ... 51 students

Informatics (from 1971/72 ... 1978/79) ... 609 students

Total (from 1961/62 to 1978/79): 1372 students

The last generation of students, 121, enrolled in the year 1979/80 should be added to the list, which all together makes a total of 1493 students. Up to the middle of 1981, 288 candidates defended their master theses. Considering the fact that this programme is a typical example of the "work and study" scheme, this result can be considered satisfactory, both as regards the number of candidates and the quality of the knowledge gained.

In order to further improve the studies and to keep up with the latest scientific and professional achievements, Božo TEŽAK, in collaboration with other lecturers, worked out a new (sixth) version of the Curriculum and programme. This new programme suggested the introduction of a new course in Communicology. This curriculum has not been accepted on account of substantial changes which have taken place in the organizational structure of the university postgraduate studies in connection with new legal regulations. Their strict application started in the academic year 1979/80. At the beginning of 1980, all the rights of the Councils of the Heads of the University postgraduate programmes were transferred to the corresponding faculties of the University of Zagreb, considered a parent institution for this postgraduate programme. Since then, the Faculty of Organization and Informatics in Varaždin has become responsible for the LDIS, that is, the Council of Lecturers of the PSLDIS. In agreement with this Faculty, the Council has assumed more responsibility and has received the right to accept the themes for master theses to name the tutors, and commissions for the assessment and defence of the theses and to accept the reports of these commissions regarding master theses (1).

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Conference paper

BIBLIOMETRIC ANALYSIS OF MASTER THESES IN INFORMATION SCIENCES[+] (POSTGRADUATE STUDIES IN LIBRARIANSHIP, ARCHIVISTICS, MUSEOLOGY AND INFORMATION SCIENCE, 1961-1984, ZAGREB, YUGOSLAVIA)

Part One

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Abstract

The aim of this bibliometric analysis is to contribute to on-going work on the revision of the postgraduate programme in Information Sciences at the University of Zagreb and to the empirical analysis of the development of both information sciences and information science education in Yugoslavia. The analysis covers 374 (96.6%) Master Theses (MTs) (5 in archivistics, 150 in librarianship, 56 in museology and 163 in information science) defended at the Centre for the Study of Librarianship, Documentation and Information Sciences (CSLDIS), University of Zagreb, from 1961 to 1984. The data have been collected and entered into a computer on (1) students: name, affiliation (sector and type of work organization, city, republic/autonomous province), educational background and the year of enrollment in/completion of postgraduate study, (2) MTs: content (discipline, field of work, indexer assigned key words), category of work (empirical research, theoretical review, practical application, bibliography), and the number of pages, (3) cited literature: the number, language and form of references (domestic - foreign; authored - non-authored; journal articles - monographs; other), cited authors/works, and the year of publication, and (4) examiners and advisors. The aim of the analysis is to provide quantitative indicators on, and an insight into, the topics covered by MTs, the shift in interest (if any) among and within the four disciplines, disciplines most closely related to information sciences, etc.; a comparison with world trends in information sciences as reflected through the cited literature, key domestic and foreign authors, etc.; regional and institutional demands for professionals in these fields in Yugoslavia as indicated by students' affiliations, etc.; the structure of the Faculty based on the data on advisors and examiners, etc. The results reported here contain some quantitative indicators of the problems analyzed.

INTRODUCTION

An empirical analysis of the master theses (MTs) in librarianship, archivistics, museology and information science defended at the University of Zagreb (from 1966 to 1984) may contribute to the study of not only the history of information sciences in Yugoslavia, but also to the study of the development of information science education in particular. This is due to several factors. The Centre for the Study of Librarianship, Documentation and Information Science (CSLDIS) is the only institution in Yugoslavia that offers a postgraduate programme in librarianship, archivistics, museology and information science. It was founded in 1961 (librarianship in 1961/1962, museology in 1966/1967, archivistics in 1970/1971 and information science in 1971/1972). This postgraduate programme has always been based on an integrative and generalist approach to education in these fields as opposed to one that is narrow and specialist. It has tried from the very beginning to blend modern information sciences and technology with traditional disciplines such as librarianship, archivistics, museology and

[+] Throughout the text the term information sciences is used as a common term for the four disciplines of the Postgraduate study in librarianship, documentation and information science: archivistics, librarianship, museology and information science. Apart from being a practical abbreviation, this term does suggest and reflect the integrative approach of the PSLDIS.

documentation. In this context its organizational framework, that relied on the University as a whole and not on any of its independent divisions, schools and departments, was particularly appropriate. Resources, both in terms of the Faculty and equipment, were drawn from the relevant University member institutions in general and from the Referral centre of the University of Zagreb in particular. The historical development of the postgraduate programme in librarianship, documentation and information science (PSLDIS) is presented in the Conference paper by Prof. Dr. V. Muljević (1984). We will not, therefore, repeat what has already been said about the PSLDIS. The basic factographic data on the PSLDIS are provided also in: V. Muljević (1981), Curriculum plan and lecture programme of courses at the PSLDIS, University of Zagreb (Nastavni plan CSBDIZ-a 1970, 1971, 1972), M. Husar (1981), and B. Podunavac-Škvorc (1981).

The MTs defended at the PSLDIS represent a good sample for the study of the development of information sciences and information science education in Yugoslavia for several reasons:

(a) through them it is possible to follow the development of main subject areas and disciplines in information sciences within the framework of the PSLDIS
(b) students enrolled in the PSLDIS come from all parts of Yugoslavia
(c) the PSLDIS Faculty consists of professors who deal with different problems and aspects of information and communication and who come from different University Institutions.

However, the motives for this study of the students , MTs and the Faculty of the PSLDIS do not spring only from a desire to establish some empirical data on the development of information sciences and information science education in Yugoslavia in the period 1961 to 1984, but also from an awareness of the need for a revision of the course programme and the organizational framework of the PSLDIS. Let us note at least some of the reasons for the necessary changes. The past ten years have witnessed the development of secondary school and undergraduate programmes in information sciences which has resulted in an increase in the level of information knowledge and skills in general, and among prospective PSLDIS students in particular. The Zagreb University Postgraduate Centre, founded in 1970 and providing an administrative and organizational framework for the PSLDIS and some other interdisciplinary and multidisciplinary postgraduate programmes, was practically dissolved in 1980 following a decision (passed at the meeting of the Scientific and Educational Council of the University of Zagreb, held on 19th February, 1980) that organization of all interdisciplinary postgraduate programmes be based on inter-School arrangements instead. This official, administrative decision was supported by an increased interest in organizing independent postgraduate courses in University Institutions that offer undergraduate programmes in information sciences (e.g. Faculty of Philosophy, Zagreb, Faculty of Organization and Informatics, Varaždin). Since 1980 enrollment in the PSLDIS has been discontinued. Work on the revision of course content as well as on the resolution of organizational and administrative problems brought about by administrative changes at the University has been taking place ever since (see Nacrt plana i programa PSIZ-a, 1984). It is expected that the PSLDIS will reopen with a new programme in the summer semester of the academic year 1984/85.

Since any planning and revision necessarily draws upon and proceeds from earlier work, this bibliometric analysis of the PSLDIS MTs defended from 1966 to March 1984 has been conducted so as to provide an insight into, and some quantitative indicators on, different aspects of the programme. Another aim, broader in scope, has been to find out more about the history of the development of information sciences and information science education in Yugoslavia as reflected in the MTs defended so far.

METHODS

The analysis covers 374 (96.6%) MTs (5 in archivistics, 150 in librarianship, 56 in museology and 163 in information science) defended at the PSLDIS Centre of the University of Zagreb up to April 1984. (The total number of the MTs defended at the PSLDIS Centre from 1966 to 1984 is 387; this accounts for 5.57% of all MTs defended in SR Croatia in the period from 1966 to 1982 - according to the Statistics Yearbooks for Croatia, 1974/1983).

The data have been collected and entered into a computer on (1) students: name, affiliation (sector and type of work organization, city, republic/autonomous province), educational background and the year of enrollment/completion of the PSLDIS, (2) MTs: content (discipline, fields of work, indexer assigned key words), category of work (empirical research, theoretical review, practical application, bibliography)and the number of pages, (3) cited literature: the number, language and form of references (domestic-foreign; authored-non-authored; journal articles-monographs-other), cited authors/works, and the year of publication, and (4) examiners and research advisors. The analysis of the data entered should provide quantitative indicators on, and an insight into, the topics covered by the MTs, the shift in interest among and within the four disciplines, those disciplines most closely related to information sciences, etc.; compari-

son with world trends in information sciences as reflected through the cited literature, key domestic and foreign authors, etc.; regional and institutional demands for professionals in these fields as indicated by the students' affiliations, etc.; the structure of the PSLDIS Faculty based on the data concerning advisors and examiners, etc. The results reported here contain some quantitative indicators of the problems analyzed.

RESULTS AND DISCUSSION

(1) Students

The tables presented in the first part of the Results and Discussion section provide data on the dynamics of the completion of the PSLDIS, duration of study, distribution of students according to the republics and autonomous provinces of SFRY, students' previous education and the sector and kind of work organization they were employed in at the time of their graduation from the PSLDIS Centre.

In Yugoslavia as well as in other countries, this particular field of study has attracted graduate students from diverse academic fields and with diverse practical work experience. However, most of the FSLDIS students were employed in an information/documentation/library service of some kind which must have been the reason why they decided to acquire new knowledge and further formal qualifications in information sciences and thus to enrol in the PSLDIS. The first MT was defended at the PSLDIS in 1966; the dynamics of the completion of this postgraduate course since then can be followed in table 1.

Table 1: The dynamics of the completion of the PSLDIS according to disciplines, 1966-1984

year of completion \ discipl.	arch.	lib.	mus.	info. sci.	total	
1966		4			4	
1967		1			1	
1968		6			6	5%
1969		1	1		2	
1970		3	1		4	
1971		2	1		3	
1972		4	3		7	
1973		2	1		3	
1974		9	7	5	21	14%
1975	1	12	2	4	19	
1976	1	21	7	10	39	
1977	1	14	5	10	30	
1978	1	11	5	7	24	50%
1979		7	7	8	22	
1980		19	7	47	73	
1981	1	24	7	45	77	
1982		6		14	20	31%
1983		4	2	12	18	
1984		0		1	1	
	5	150	56	163	374	

At first the majority of students who completed the PSLDIS graduated in librarianship. After the introduction of information science as a separate field of specialization in 1971, most students graduated in information science. If the entire time period from 1966 to 1984 is divided into approximately equal subperiods, it can be noted that between 1976 and 1980 more than 50% graduated from the PSLDIS Centre, the next period (1981-1984) accounting for 30%. The absolute record in the number of graduating students was reached in 1981 when 77 students completed their studies. Apart from the year of completion it is also interesting to examine the duration of study at the PSLDIS Centre. Data on this are presented in table 2.

Table 2: Breakdown of the MTs according to discipline and duration of study

duration \ discipl.	arch.	lib.	mus.	info.sci.	total	
2		7	1	8	16	17%
3		21	8	17	46	
4		27	10	18	55	27%
5	1	13	8	25	47	
6	2	15	7	25	49	35%
7	1	16	5	31	53	
8		9	6	15	30	
9		7	3	13	23	13%
10		12	3	10	25	
11 and more	1	23	5	1	30	8%
	5	150	56	163	374	

As we have already pointed out the PSLDIS students were part-time students i.e. they were at the same time employed in full-time jobs. This probably accounts for the students' prolonged length of study. About 17% of the students completed their studies in 3 years, but it took another 35% 6 to 8 years to graduate.

Since this postgraduate programme is the only one of its kind in Yugoslavia, it is interesting to see the breakdown of the PSLDIS students, according to different republics/provinces of Yugoslavia shown in table 3.

Table 3: Breakdown of the MTs according to republics/provinces of SFRY, and disciplines

rep./prov. \ discipl.	arch.	lib.	mus.	info.sci.	total	
Bosnia & Herzegovina	1	16	6	12	35	9%
Croatia	1	69	24	122	216	58%
Macedonia		10	6	6	22	6%
Montenegro		1	2		3	1%
Slovenia		5		10	15	4%
Serbia		36	7	4	47	13%
Kosovo	1	4	1	5	11	3%
Vojvodina	2	6	9	3	20	5%
Foreign countries		3	1	1	5	1%
	5	150	56	163	374	

58% of students from Croatia, where the PSLDIS is offered, and 41% of students from other republics and provinces give proof of the Yugoslav character of the PSLDIS.

The educational background of the PSLDIS students is shown in table 4, the academic fields being divided into Science and Technology (group A) and Social Sciences and Humanities (group B). (The data in table 4 are not precise since most undergraduate programmes in Yugoslavia require graduation in two subject fields e.g. English language and Sociology, Chemistry and Biology. In some cases students graduate in fields belonging to different areas (Natural sciences and Humanities). Thus, the first number in table 4 refers to all academic fields that appear as educational background of the PSLDIS students, while the numbers given in brackets refer only to the fields appearing as a major subject in undergraduate studies).

Table 4: Educational background of the PSLDIS students

Areas \ discipl.	arch.	lib.	mus.	info. sci.	total
Science and Technology		28(24)	8(8)	97(90)	133(122)
Social sciences and Humanities	6(5)	159(117)	48(40)	85(67)	298(229)

This table clearly shows that although information sciences have attracted people from diverse professions and academic disciplines, social sciences and humanities prevail. Students with an educational background in science and technology for the most part chose information science as field of specialization in the PSLDIS. Still, the number of information science students with a background in social sciences and humanities is almost equal (i.e. 46% and 43% respectively). In the educational background of students graduating in librarianship, social sciences and humanities dominate.

The disciplines within the two areas (science and technology and social sciences and humanities) that most often occur in students' educational background are as follows:

		No. of PSLDIS graduates
Group A:	Science and Technology	
	Electrical Engineering	25 (25)
	Mathematics	24 (23)
	Chemistry	19 (16)
	Physics	17 (11)
Group B:	Social sciences and Humanities	
	English lang. and lit.	32 (20)
	Yugosl. lang. and lit.	30 (27)
	Romance lang. and lit.	21 (10)
	German lang. and lit.	15 (8)
	History	26 (24)
	Economics	26 (26)
	Education	19 (16)

Group A shows a much lower range, electrical engineering and mathematics being the most popular disciplines.

Group B is dominated by the humanities (mostly language and literature studies), while among the social sciences the most frequent subjects are history, economics and education. There are only 10 students with an educational background in behavioural sciences.

While the link between the students' educational background and the discipline of PSLDIS they specialized in was for the most part arbitrary (except for the fact that the students with a background in science and technology tended to choose information science rather than other PSLDIS disciplines), the link between the students' PSLDIS specialization and their employment was more direct. This is shown in table 5.

Table 5: Breakdown of the MTs according to disciplines and authors' affiliation

authors' affiliation \ discipl.	arch.	lib.	mus.	info.sci.	total	
archives	4	3			7	2%
museums/ galleries		1	41		42	11%
libraries		64	1	4	69	18%
documentation centres		18	1	24	43	11%
research institutes	1	21	2	11	35	9%
educational institutions		17	2	31	50	13%
university departments		4	1	17	22	6%
other		19	6	72	97	26%
unknown		3	2	4	9	4%
	5	150	56	163	374	

Eighteen percent of students were employed in libraries, 13% in educational institutions, 12% in documentation centres, 11% in museums and galleries (of these almost all specialized in museology), 9% in research institutions, and 6% in university departments. These data refer to the students' employment at the time of their graduation from the PSLDIS.

If we group these results so that archives, museums, galleries, libraries and documentation centres are taken to represent information services, research institutes and university departments to represent research and educational institutions, it can be seen that 43% of the PSLDIS students came from information services and 23% from research and educational institutions, while 28% came from other types of institutions.

In table 6 the work organizations the students were employed in are divided into the productive and non-productive sectors of the economy. Socio-political organizations which also belong to the non-productive branch of the economy are shown separately. It is

evident that the majority of the PSLDIS students were employed in the non-productive sector of the economy (78%).

Table 6: Breakdown of the MTs according to sectors of the economy and authors' affiliations

authors' affiliations \	prod. sector	non-prod. sector	socio-pol. organizat.	total
archives		6	1	7
museums/ galleries		42		42
libraries		67	2	69
documentation centres	5	34	4	43
research institutes	3	32		35
educational institutions	2	45	3	50
university schools		22		22
other	48	42	7	97
unknown				9
	58	290	17	374

(2) Master Theses (MTs)

The data collected on the MTs refer to their content and category. The content is analyzed on three levels: on the level of the PSLDIS disciplines, on the level of fields (topics) and on the level of indexer-assigned key words. The first level of analysis is represented in the organizational structure of the PSLDIS through which the students are offered four disciplines to specialize in: archivistics, librarianship, museology and information sicence. We defined the fields and key words after reading the abstract, the title, the contents and the author-assigned key words for each MT analyzed.

The fields are:

(1) designations of narrow topics within the four disciplines with which the MT deals (e.g. electronic data processing (EDP), bibliography, information needs, classification, memorial collections, protection of archival material etc.)

(2) designations of the disciplines/fields related to information sciences through a common concern with information and communication phenomena (e.g. cybernetics, communicology, linguistics etc.) and upon whose theoretical, empirical and practical achievements information sciences often draw

(3) designations of those disciplines/fields whose methods information sciences use (mathematics, statistics) and

(4) designations of those disciplines/fields that appear as fields of application of information sciences (e.g. medicine, chemistry etc. if the MT deals with special librarianship, documentation, classification etc. in medicine, chemistry etc.).

The analysis of the coverage of different fields in the MTs should provide answers to the following questions:

(1) what are broad thematic links and interrelations between archivistics, museology, librarianship and information science?

(2) what problems of the information sciences are most often treated in the MTs?

(3) what other disciplines/fields most often occur in relation to information sciences - either as a field of application, related field or auxiliary field?

(4) to what extent do the MTs display the multidisciplinarity of the information sciences i.e. to what extent does one and the same thesis cover different fields?

The topics most often covered by the MTs in different disciplines are shown in table 7.

Table 7: The topics most often covered in the MTs in librarianship and information science

fields of work \ discipl.	arch.	lib.	mus.	info.sci.	total
Information systems		9		57	66 (18%)
EDP				47	47 (12%)
Documentation		27	5	12	44 (11%)
Bibliography		20	2		22 (6%)
Special libraries		19	1		20 (5%)
Data bases				15	15 (4%)
Classification		9			9 (2%)

The narrow fields of work (topics) within different disciplines of information sciences were found to belong to one of the five major areas:

(1) information infrastructure - overall description of information units

(2) information material - selection, acquisition, identification, preservation and collection development,

(3) ways and means of storage, retrieval and interpretation of information content

(4) information use and user education, and

(5) information technology - electronic data processing, reprography, micrography, etc.

The coverage of these areas in the MTs in different disciplines is shown in table 8.

Table 8: Coverage of five major areas in the MTs in different disciplines

Area	arch.	lib.	mus.	info.sci.	total
(1)	1	65	44	58	168 (45%)
(2)	2	40	14	6	62 (16%)
(3)	1	44	7	20	72 (19%)
(4)		4		8	12 (3%)
(5)		6	1	83	90 (24%)

63 different fields of application of information sciences in the MTs were identified. Ten most frequent ones are shown in table 9.

Table 9: Most frequent fields of application of information sciences as covered by the MTs in different disciplines

Field of application	arch.	lib.	mus.	info.sci.	total
Education		23	4	23	50 (13%)
History	3	13	10		26 (7%)
Medicine		16		4	20 (5%)
Military art & science		7		5	12 (3%)
Traffic transport		1		8	9 (2%)
Economy		4	2	32	38 (10%)
Chemistry		3		5	8 (2%)
Civil engineering		2		6	8 (2%)
History of art			1	6	7 (2%)

Further analysis of the fields of application of information sciences identified in the MTs shows how the following sectors of human activity are represented in them:

Sectors	arch.	lib.	mus.	info.sci.	total
Science & techn.		33	7	26	66 (17%)
Social. sci.	4	47	22	30	103 (27%)
Arts & hum.		13	7	1	21 (6%)
Industry/Economy		29		61	90 (24%)

There are 9 disciplines/fields identified as related or auxiliary to information sciences in the MTs analyzed. They are listed in table 10 in the order of frequency of their occurrence in the MTs.

The number of MTs in different PSLDIS disciplines covering one, two and more fields is shown in table 11.

Table 10: Representation of related/auxiliary fields in the MTs in different disciplines

Related/ auxiliary fields	arch.	lib.	mus.	info.sci.	total
Operations research				20	20
Linguistics	1	5		10	16
Communicology		1		6	7
Statistics				5	5
Cybernetics		1		2	3
Systems theory				3	3
Mathematics				2	2
Logic				1	1
Semiotics				1	1

Table 11: Breakdown of the MTs according to disciplines and the number of fields of work covered

No. of fields of work	arch.	lib.	mus.	info.sci.	total
1	2	31	13	19	65 (17%)
2	2	94	37	94	227 (61%)
3	1	23	6	45	75 (20%)
4		2		5	7 (2%)

On the basis of these preliminary results it is possible to conclude that:

(1) analysis and description of information units (libraries, archives, museums, information and documentation services) appears to be the most frequent topic of the MTs analyzed, found in 45% of the MTs. A preoccupation with this theme is shared by all the PSLDIS disciplines. Selection, acquisition, identification and preservation of information material were found as topics in all the PSLDIS disciplines, but in the MTs they were more frequent in librarianship, museology and archivistics than in information science. Storage, retrieval and interpretation of information content were found to be the topics of the MTs in all the disciplines. Their coverage was best in librarianship (29% of the MTs in this discipline). Of all the topics documentation seems to be the strongest common link between the information science disciplines since this topic appears in the MTs in all the disciplines except for archivistics. This last may be due to the small number of MTs in archivistics in the sample analyzed. It is interesting to note that information technology appears as a subject of study almost exclusively in the MTs in information science.

(2) some fields/topics appear in more disciplines which confirms the relatedness of these disciplines and justifies the integrative conception of the PSLDIS.

(3) other disciplines/fields are represented in the MTs most often in the role of the fields of application of information sciences. In that role most frequent are the social sciences (they appear in 27% of the MTs; their coverage is equal in different disciplines) while arts and humanities are the least frequent (they appear in only 6% of the MTs). It is interesting to note a rather high proportion of the economic sector among the fields of application (24% of the MTs) in general, and as a field of application in the MTs in information science in particular (36% of the MTs in information science).

Disciplines/fields that appear as related and/or auxiliary are mostly restricted to the MTs in information science. Most prominent among these are operations research and linguistics.

(4) Sixty six percent of the MTs cover more than one field of work which provides evidence of the multidisciplinary approach used by the students in their MTs.

Cluster analysis of key words yet to be conducted should show to what extent these preliminary conclusions are valid since it might offer a better picture of the relations and interrelations between different fields (topics) and disciplines. Similarly, a closer examination should be made of the links between the students' educational background, their employment and the topics and fields covered in the MTs.

The fact that archivistics, librarianship, museology and the newly-emerged subject of information science are all deeply rooted in the problems of everyday practice, insufficient differentiation of their own theoretical and methodological apparatus as well as the lack of clear delineations between them and the disciplines related to them are all manifested in the analyzed MTs. Since information work includes both theoretical and practical problems, we have categorized the MTs into four categories, according to the nature of work presented:

(1) description and /or planning of practical application (description of a library, documentation service, museum, archives, collection etc. with a more or less analytical/value/critical judgement involved)
(2) bibliography (bibliographic description of the sources of information/documents, usually with an introductory theoretical discussion of bibliography)
(3) theoretical review (a review of the problems based on literature, ranging from compilations to original syntheses of the subject knowledge) and
(4) empirical research conducted during postgraduate study.

The coverage of each category in different disciplines and in the total sample is shown in table 12.

Table 12: Breakdown of the MTs according to category and disciplines

Category	arch.	lib.	mus.	info.sci.	total
Practical application	1	64	33	62	160 (43%)
Bibliography	2	23	4	1	30 (8%)
Theoretical review	1	46	17	66	130 (35%)
Empirical research	1	17	2	34	54 (14%)
Total	5	150	56	163	374

Since categories (1), (2) and partly also (3) are all categories of professional work, without attempting any value judgement which would be methodologically wrong - since we proceed from a purely quantitative analysis, - it can be concluded that both in the total sample as well as in all the disciplines professional work prevails over scientific research work. This finding indicates that the primary role of the PSLDIS was a pragmatic one: to educate personnel for future (and current) work in information services in the broad sense of the term. In view of the domination of professional practice-oriented work over research in general, and in view of the low percentage of empirical research in particular(only 14% of the MTs were based on empirical research), the question is raised whether information sciences in this country can develop if they almost exclusively draw upon professional, practice-orientied work and/or review work rather than on empirical research. Since the results of empirical research are important also for the development and advancement of professional and theoretical work, the low percentage of empirical research deserves special attention.

(3) Cited literature

All the data on the literature cited in the MTs were computer-processed so as to enable not only a cluster analysis of the most cited authors, but also an analysis of the following aspects of the cited literature:

(a) origin of the cited literature (domestic-foreign literature)
(b) form of literature (journal articles - monographs and miscellaneous/semi-publications, official documents, encyclopaedias etc.)
(c) authorship (authored-nonauthored literature)
(d) the year of publication.

So far, only the data presented in tables 13-15 are available. The data on the most cited domestic and foreign works, as well as the cluster analysis of the most cited authors, will be presented and interpreted in part two.

The data in table 13, giving the number of references in the MTs, show that there are notable differences in the number of references in the MTs in different PSLDIS disciplines. If we compare the data on the number of references in the MTs in librarianship with those in information science, it may be noted that 40% of the MTs in librarianship and 61% in information science contain not more than 40 references. About one third of the MTs in both these disciplines cite up to 80 references (34% of the MTs in librarianship, and 28% in information science); however, 26% of the MTs in librarianship and only 11% in information science cite more than 80 references. It is also interesting to note that over 50% of the MTs in museology cite more than 80 references.

Table 13: Breakdown of the MTs according to disciplines and the number of references

No. of references	arch.	lib.	mus.	info.sci.	total
up to 20	1	17	6	35	59 (16%)
" 40	1	43	3	65	112(30%)
" 60	1	28	8	33	70 (19%)
" 80		23	8	12	43 (11%)
" 100		11	7	8	26
" 160	2	18	8	9	37 (24%)
200		6	8	1	15
over 200		3	8		11
total	5	149	56	163	373

These differences in the number of references between the MTs in different disciplines can be explained in several ways, but any one of them would require additional study and checking. As early as at the time of data collection and coding it occurred to us that the difference in the attitudes of authors working in different fields of science and scholarship towards using and citing the source literature might at least in part account for the noted differences in the citing patterns among the PSLDIS disciplines. It seems that, both in terms of its form and function, the nature of citing (and thus the attitude towards the cited literature) is quite different in museological (and also in some librarianship) studies than that in information science. Museologists, through cited literature, most often define sources and establish factography to support the theme they are discussing; the literature they cite is often unique in physical form and of limited availability (accessibility). The MTs in information science most often cite journal articles and monographs, i.e. the documents whose availability (accessibility) is not limited. Therefore, we believe that this difference points to a theoretical problem of, and a need for, a distinction between a bibliographic reference (cited literature) and a source of data (source of information) which is of great importance for the understanding of bibliometric analysis in general, and of citation analysis in the social sciences and humanities in particular.

Table 14: Breakdown of the MTs according to disciplines and the number of foreign languages used in cited literature

No. of languages \ discipl.	arch	lib.	mus.	info.sci.	total
0	1	23	7	22	53 (14%)
1	2	25	5	54	86 (23%)
2		28	7	50	85 (23%)
3	2	28	8	23	61 (16%)
4		23	6	8	37 (10%)
5		13	11	2	26 (7%)
6		8	5	2	15
7			3		3
8		2	3		5 (7%)
9			1		1
total	5	150	56	161	372

Table 14 provides a breakdown of the MTs according to disciplines and the number of foreign languages used. Fourteen percent of the MTs do not cite literature in foreign languages, 23% of the MTs cite literature in only one foreign language, the same proportion of the MTs citing literature in 2 foreign languages; in 33% of the MTs there are references in 3 to 5 foreign languages while as many as 7% of the MTs have references in 6 to 9 foreign languages - this last finding first and foremost refers to the MTs in museology and librarianship.

For the MTs in information science it is characteristic that 14% of them have no references to literature in foreign languages, 33% of the MTs cite literature in only one foreign language, 31% cite literature in 2 foreign languages, 14% of the MTs cite literature in 3 foreign languages, while only 8% of the MTs cite literature in more than 3 foreign languages.

Table 15: Representation of major world languages in cited literature in the MTs in different disciplines

foreign language \ discipl.	arch.	lib.	mus.	info.sci.	total
English	2	114	28	133	277 (74%)
French	2	61	25	18	112 (30%)
German	1	76	38	62	177 (47%)
Russian	1	56	22	42	121 (32%)

Table 15 shows the frequency of occurrence of major world languages in the literature cited in the MTs. As much as 74% of the analyzed MTs cite literature in English, while almost half of the MTs (47%) cite literature in German. However, this table also shows that there are some differences with regard to the representation of major foreign languages in the cited literature between different PSLDIS disciplines. English dominates as a language of reference literature in information science (83%) and in librarianship (76%). German prevails over other major world languages in museology literature (68%), is frequent in librarianship literature (50%), and is less present in information science literature (38% of the MTs in information science). Literature in French is more frequent in the MTs in librarianship (45%) than in the MTs in information science (11%). Literature in Russian is cited by more than one third of the MTs in librarianship (37%) and by only one fourth of the MTs in information science (26%).

i4) PSLDIS Faculty

Tables 16 and 17 present a survey of the PSLDIS Faculty members who most frequently served as members of the Examination Board for the Defense of the Thesis, and/or who most often served as research advisors for the work on the thesis. Thus, we can proceed with an assumption that these tables contain the data that enable an analysis of those phenomena of scientific and scholarly communication realized in the framework of the PSLDIS, in literature well known under the term "invisible college", or "gate keepers" (according to D. de Solla Price, 1975, D.J. Amick, 1974). Once the data on the most cited domestic authors and works become available, if we assume that

they constitute the Yugoslav "research front" in information sciences, we will have a better insight into the influence exerted by different university professors and researchers on the development of both information sciences and information science education in Yugoslavia.

For the time being, of 16 professors who most often served as examiners at the defense of the theses, involvement ranged from 32% (B. Težak), to 6%. The first five professors (B. Težak, A. Stipčević, S. Tkalac, A. Bauer, Lj. Markić-Čučuković) served in between 16% to 32% of the Examination Boards, while the last five professors listed in the table were examiners in 6% to 8% of the MT defenses. Out of these 16 PSLDIS professors only three were examiners exclusively in one PSLDIS discipline; the interdisciplinarity and interrelatedness of the PSLDIS programme are manifested also in the participation of the same professors in the Examination Boards for the MT defense in different disciplines.

Table 16: Faculty members most often serving as examiners at thesis defence

Faculty members	Period from-to	arch.	lib.	mus.	info.sci.	total	
B. Težak	66/80	2	78	6	36	122	(32%)
A. Stipčević	73/83		66	2	7	75	
S. Tkalac	72/83		12		57	69	
A. Bauer	69/83	2	10	55	1	68	
Lj. Markić-Čučuković	66/84		58		2	60	(16%)
V. Šilović	73/83		1		47	48	
T. Blažeković	77/83		35	5	8	48	
S. Čanadjija	69/83		2	37		39	
S. Dobrenić	78/82				30	30	
M. Mikačić	80/83		30			30	
S. Kliment	80/83				30	30	(8%)
V. Muljević	68/82		5		24	29	
I. Furlan	70/83		9	2	18	29	
M. Plenković	80/83		7		19	26	
I. Maroević	75/81		3	21		24	
V. Matković	66/84		8		15	23	(6%)

Thus, B. Težak and A. Bauer were examiners in all the four disciplines of the PSLDIS, while A. Stipčević, T. Blažeković and I. Furlan served as examiners in three.

Table 17 gives a list of professors most often serving as advisors on the MTs. This table contains no name that has not already appeared in table 16. The ten professors shown in this table were advisors to 218 out of 374 PSLDIS students, or in other words, in 58% of the MTs. Professor A. Bauer and professor B. Težak served most often as advisors (in 13% and in 10% of the MTs respectively).

It can be noted that these professors were advisors most often in one PSLDIS discipline, and only rarely in two. It is also evident that in no PSLDIS discipline is there such a dominant figure as Professor A. Bauer in museology. He was an advisor on 46 MTs (out of 56 MTs in museology). The data in table 16 and table 17 point to obvious links and mutual influence between librarianship and information science. Unfortunately, these quantitative data are not sufficient for a qualitative analysis of this relationship.

Table 17: Faculty members most often serving as advisors

Faculty members	Period from-to	arch.	lib.	mus.	info.sci.	total
A. Bauer	69/83		1	46		47
B. Težak	66/79		27		11	38
A. Stipčević	74/83		21		2	23
S. Tkalac	74/82		2		19	21
V. Šilović	76/83				21	21
M. Mikačić	74/82		17			17
S. Dobrenić	78/82				14	14
Lj. Markić-Čučuković	74/82		13			13
I. Furlan	74/81		6		7	13
V. Matković	69/81		4		7	11
			91	46	81	218

Since the mid 1970s bibliometric analysis has been gaining in importance as a method for the analysis of scientific and scholarly production in Yugoslavia. However, this method has only rarely been used for the analysis of Master and Ph.D. theses (an exception is the research presented in N. Prelog, M. Tuđman (1977 a, 1977 b), M. Tuđman, N. Prelog, D. Boras 1977). The present research is the first bibliometric analysis of the MTs in information sciences in Yugoslavia, and since it is still in progress, we have here presented only the first results. The following results are yet to appear:

- the most cited domestic and foreign authors
- development and interrelations of subfields within and between disciplines
- cluster analysis of key words
- distribution of references according to the time span between publication and citation
- analysis of the form of cited literature
- etc.

Finally, instead of stating any definite conclusions, we will try to outline some aspects in which this analysis might improve our knowledge of the development of information sciences and information science education in Yugoslavia:

- some of the quantitative indicators presented here provide precise dating for the beginning, the directions and dynamics of part of that development,
- a shift of interest that appears in this period points to the differentiation of the basic fields within individual PSLDIS disciplines,
- this shift of interest also points to the links that exist or do not exist between disciplines,

- *regional and institutional distribution of professionals and specialists in these fields in Yugoslavia is indicative of the intensity and dynamics of the development of not only the personnel but also of the information infrastructure on the whole*
- *recognized demands for information specialists provide evidence of a systematic planning of personnel policy in some information and documentation centres in Yugoslavia,*
- *the data on the structure and category of the MTs are important for the planning of future postgraduate programmes in this field,*
- *etc.*

Bibliometric analysis by the very nature of its methodology aims at a quantitative analysis of (scientific and scholarly) communication phenomena. For this reason we will be careful in making qualitative judgements concerning the MTs analyzed both now and in the future. Still, we believe that even this quantitative analysis will contribute to a fuller understanding of the development of information sciences and information science education in Yugoslavia.

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Conference paper

LIBRARY AND INFORMATION SCIENCE EDUCATION FOR YUGOSLAVIA:
an external view of needs and problems

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Abstract

If library and information services are to make the maximum contribution to national development a strong and adequate cadre of professionally educated staff of high calibre is essential. They set, maintain and safeguard standards of service and provision and they create a sense of professional identity. In Yugoslavia they can make a special contribution in helping bring about the coordination of the library and information resources of the nation and the republics into an integrated, mutually supportive whole.

The definition of federal, republic, and local library and information goals and objectives is a prerequisite to identifying the consequent professional educational goals and objectives. Manpower planning is essential if Yugoslavia's present very small number of professionally qualified library/information personnel is to be rapidly increased.

The major problems involved in creating adequate and appropriate professional education provision for Yugoslavia are considered. These include the choice between undergraduate and postgraduate provision; the number and location of the programmes to be offered; the leadership and coordination of postgraduate programmes which must draw staff from different faculties and departments; the part-time character of postgraduate courses; the lack of suitably qualified teaching staff; the consequent need for overseas training and interim use of expatriates; the language of instruction; the availability of professional literature; the need to establish academic respectability and to engage in research; course content - how much Information Technology? supportive staff.

During the last 20 years or so I have been privileged - like several other members of this audience- - to visit many countries of the world on library and information matters: usually, but not exclusively, in connection with professional education and training problems; more often than not, in the developing world - though certainly not always: for example one of my happiest and most professionally stimulating assignments was with Bob Hayes and Lester Asheim, to make an assessment of the postgraduate professional education needs in our field of the Province of Ontario, Canada.

Two years ago a UNESCO assignment brought me to Macedonia, to look into the problems and needs of professional education for library and information work in that republic, and this is no doubt the main reason for my being asked to be course director on this present programme. Now if experience over the years has taught me one thing it is that the library and information problems and needs of a particular country are in many respects unique to that country; that one cannot transfer wholesale from one country to another its methods. its arrangements, for dealing with any particular need or problem - whether it be a system of professional education and training or, indeed, a national information policy. In Yugoslavia, with its 6 different republics, all with a high degree of autonomy in many areas, this is even more than usually the case. Some 20 years ago, when the late Professor Tijak visited me for discussions in Sheffield, I learned a little about Yugoslavia's professional education needs and problems - and about his own exciting and pioneering intentions which have clearly borne rich dividends; and certainly during my time in Macedonia under the expert guidance of Mrs Zdravka Pejova I was able to achieve a good degree of awareness of that particular republic's situation. But beyond that I had only the briefest of whistle stops, in Zagreb and Sarajevo and I do realise how very ignorant I am of what has been achieved elsewhere. I start with this apologia so that you may attach appropriate weight - or rather lack of weight - to what I shall say; and in the hope that my Yugoslavian colleagues will overlook and forgive any of the more crass errors that may creep into this paper; particularly if, through ignorance, I underestimate the level of development

that has been reached in some of the more advanced regions of your country.

Now if what I am to say about professional education for librarianship and information science is to make sense, one must first of all think in terms not just of what such education is trying to achieve, but why. And this pushes the matter back still further - why librarianship and information science? Why libraries and information services? This takes us further back still to what is a basic prerequisite for the creation of effective national provision of such services: and that is an awareness by policy and decision makers at all levels of the vital contribution of information - and therefore of library and information services - to national development: economic development, scientific and technological development, cultural development, social development, and - by no means the least important - the personal development of individual citizens in search of recreational, cultural and spiritual refreshment. Now I would guess with some confidence that there is no - one in this room who has not experienced at least some degree of ignorance on the part of policy and decision makers - from Ministers to head teachers, from works managers to college principals - some degree of ignorance both of the importance of information, and of its availability - usually freely, and often in great quantities. From this I would extract at least 2 lessons of relevance to our theme this morning. First, the need to select and train for the library and information professions not just potentially competent practioners, but people with the force of character and personality to get through to policy and decision makers the value and importance of what library and information services have to offer, at all levels and to all types of activity - and the consequent need to make adequate financial resources available. And secondly, there comes through loud and clear the need for information seeking and library - using skills to be built into every citizens awareness - and this means built into the educational process - from the infant to the tertiary stage; and not least to be built into the programme of teacher - training. To literacy and numeracy, must be added what some are now calling informacy.

How then does Yugoslavia match up to these two general requirements? In the report on my Macedonian assignment I noted an awareness by Ministers, directors of research institutions, managers of working organisations, and other key figures - of the importance of information and library services - an awareness, at least, in discussion. The extent to which that was translated into practical terms by adequate funding, varied considerably; and I am not competent to judge whether, having regard to total national resources of all sorts, library and information services in Macedonia are getting their fair share. I was however able to find - in Macedonia - many of the elements needed for a total national library and information infrastructure - some of them, such as the public library service, being at a very rudimentary and very fragile stage in development; others, such as the Library of the Academy of Sciences and Arts, representing quite strong, but very under-used collections. Clearly then in Macedonia there have been people at decision-making level who recognised the need for the country to have library and information services of different types; and hence the existence of an embryonic library and information infrastructure; equally clearly, there is a long way to go in filling out that infrastructure. And just filling it out is not all that is required: nowhere, as I recollect it, did I see much evidence of really strong, positive, out-going, professionally operated information service on offer; the predominant impression I got was of a rather passive and custodial approach - and I hasten to add that this is a state of affairs which is common - indeed normal in many other parts of the world.

What all of this means, as I see it, is that like so many other countries, you have a need for library and information staff not just with appropriate professional skills and competence - I shall come to that shortly - but with the strength and toughness of mind and character, the sort of personality, that will carry weight with policy and decision-makers; articulate and persuasive people who know how to argue for resources, who have the capability of getting across the message that information is a key resource in virtually any type of activity or enterprise. Whether you in Yugoslavia are getting your share of such people in the library and information professions, you are better qualified to judge than I am. If you are not I suggest you should be asking yourselves why this is so and what you are going to do about it. And succeeding in recruiting people with these qualities is not enough: you have then to make available the sort of professional education that will bring out initiative and innovative potential, that will not over-emphasise technical processing skills, but will encourage an analytical, enquiring, questioning approach to library and information services and problems, that will help develop the flexibility that the rapidly changing information scene of these last years of the 20th century makes imperative.

The second requirement which I identified as essential for the information society which we are rapidly entering is user education - which needs to start with the inculcation from the earliest days in school, of information seeking and library using skills - with all that this implies for teaching methods - for learning by finding out rather than by instruction. Such an approach gives the library and learning resource centre and the librarian in charge of it a central place in the activities of the school. Regrettably I saw no more evidence of this in your country than in the great

majority of other countries of the world - including much of my own. Here then is another clear pointer to professional education needs: the importance of producing an adequate cadre of specialist librarians trained for work in your schools, and of librarians in other sectors who are skilled in user education.

I would now like to refer briefly to another general aspect of the Macedonian library and information system that made a strong impression on me. I detected a clear awareness of the need not just for national but for international standardisation in bibliographical and related matters I gained a clear impression of the acceptance of the need to create a national system of library and information provision in accordance with accepted international standards and policies, with the influence of UNESCO and IFLA being very evident, and the National Library and the Referral Centre (of which of course there is one in each Republic) very much to the fore. So much the sadder, therefore, that with this general international awareness, currency shortages were excluding the use of foreign or international data bases. The consequences of this for the free flow of scientific information in your country - and I use scientific in the broadest sense - a flow which is central to your economic, scientific and technological needs - must be dire indeed, and the solution to this problem is of course not in the hands of librarians. However, there is a related matter of access to information resources which is not intractable and on which library and information workers can exert an influence. Let me elaborate. I come from a country which is relatively very rich in library and information resources, though there certainly are still weaknesses and gaps which need to be rectified; but with all this strength, the matter which exercises us most of all, in planning national library and information policy, is to try to ensure that we make the most of the resources that we have got already. In fact to think less and less in terms of individual, relatively self-contained units, and more in terms of a total national system or network, or resource, to which any individual unit provides an entry and access point. The success of this approach depends on a number of things and not least a speedy and efficient inter-lending machinery, with in our case, the benefit of a strong national lending library, the BLLD; but above all it depends on professional attitudes of mind - on the willingness to think cooperatively and beyond institutional boundaries. To me it was paradoxical that in your country, which in spite of the considerable investment of resources you have already made, is still relatively poorly off in library and information provision, you do not yet appear to be making the most of what you do have. Individual units seem to operate as self contained cells, operating in isolation from one another; the totality of your present library and information resources does not seem to be coordinated as an integrated and mutually supportive whole. In my experience, bringing about such a coordinated and integrated approach requires both imagination and vision of the highest order at the goal - setting and policy - making levels; plus very strong professional support and skills at the level of implementation and day-to-day operation. Such skills, such awareness of the total national network and what it has to offer; and above all - I repeat - the attitudes which will bring about such macro-thinking - these things are most effectively created and nourished by a high calibre professional education.

Now I have so far identified at least 3 very important problems and needs that bear on professional education in a wider, more general sense: the need to recruit into library and information work a fair share of people of the very highest intellectual and personal calibre; the need to inculcate information awareness and information seeking and using skills from the very earliest stages of education; and the need to think not just of the resources of individual institutions, but in terms of the entire national resource, both in creating and in using your library and information services.

This last objective would seem to me, in the Yugoslavian situation, to call for particularly clear library and information goals and objectives at 3 levels: federal, republic, and local. The identification and awareness of such goals is an essential prerequisite to the key step of manpower planning for library and information work; and manpower planning in its turn, is an essential prerequisite to determining the nature and scale of the professional education provision that you will aim to bring about: not just gross, crude, quantitative planning, but an attempt to define and quantify the categories and levels to be educated over the short, medium and long term: how many potential top level professional staff, how many intermediate, how many supportive; and with what sort of disciplinary backgrounds: what proportions of scientists, social scientists, humanists, generalists, should you be aiming for? There is also an additional and rather special factor which can be expected to apply in a situation such as that of Yugoslavia: there is likely to be an existing and probably quite large work force already serving in library and information unit, a workforce which has not had the benefit of a high level professional education: people with a great deal of on - the - job experience and, in many cases, great but unrealised professional potential. Creating appropriate professional educational facilities and opportunities for these people poses special challenges which are linked with - but go beyond - the general provision of continuing education, which is of course an essential feature for any present - day system of professional education in any field.

With all of these considerations in mind let us turn now to some rather more specific needs and problems. The first relates to the nature of our subject. Present day library and information work covers a vast spectrum of skills and activities - from library automation and on-line information retrieval ranging through management and user study to conservation and historical bibliography, at the other end of the spectrum. Obviously not all practitioners need to possess competence in all these areas, but there is a core of knowledge and skills which any effective library and information worker needs to possess. And in this day and age this core can no longer be limited to topics which fit comfortably into the mainly humanistic base of old style librarianship. The advent of the computer and the many different faces of information technology signalled the end of this. Present-day librarianship has absorbed into it many of the elements of what used to be thought of by many as something discrete and different, labelled - in most cases in accurately and misleadingly - information science. But this is not all: the ever increasing importance attached to management, to systems analysis and design, to matters such as cost-effectiveness and cost-benefit, call for attitudes and skills which derive from the social sciences rather than the humanities. Numeracy and a feeling for quantification are increasingly regarded as part of the librarian's stock-in trade, and this is reinforced by the growing emphasis world-wide on the study of the user as the logical starting point for library and information service; because the study of the user inevitably involves at least some awareness of statistics, surveying and other quantitative techniques.

What all of this amounts to is that the sort of professional education we are concerned with on this course crosses disciplinary and faculty boundaries. Ours is an interdiciplinary field of study which calls for multi-disciplinary treatment. In Macedonia, at least, this meant that it could not be suitably handled at undergraduate level, since at that level study is organised on a strictly single faculty basis. My own recommendations in fact were based on a programme at postgraduate level, where interdepartmental and inter-faculty programmes are possible; and moreover, important additional advantages flow from this choice. If the professional education is carried out at postgraduate level it can be assumed that the student is mature and already has a strong subject base, whether this be in a science in a social science, or in a humanity subject. The possession of strong subject knowledge of this sort together with library and information expertise acquired at postgraduate level, equips a professional for roles which will become more and more important in library and information work in the future: subject specialists for collection building and collection exploitation and for information service of various sorts, in research and academic libraries; subject analysts; intermediaries who not only know their way round national and international computer data bases, but who having carried out a computer search are competent to analyse, interpret and re-package the information contained in the references they have obtained, and pass it on to the enquirer: in fact supplying not just bibliographical references but answers. This is one of the more important directions which much of the library and information work of the future needs to take, if our profession is effectively to use and to accommodate to, rather than be made obsolescent by, the ever-increasing offerings of information technology.

As I understand it, postgraduate study in Yugoslavia normally means part-time study. This has a number of important implications. It means, to start with, that ideally you presumably need sufficient postgraduate programmes, sited in appropriate geographical positions, to ensure that working students can realistically hope to attend classes on a regular basis, and not have to rely on correspondence and just occasional visits. It means even under the best conditions, that students cannot benefit from continuous and every-day interaction with their teachers. On the other hand they will be more mature than full-time undergraduate students, and their working experience in operational units will illuminate the work they do in the classroom or the laboratory. As part-time student, their courses will necessarily spread over a long period, and if the approach adopted is a subject, or a bit, at a time, it will not be easy for them to see the course as an integrated whole or to realise the vital interconnections and interrelationships between topics which for convenience are taught as separate entities, but which are really part of one seamless web. Above all, there will be a tendency for the thesis - I take it for granted that a thesis will be part of the course - to drag on and on.

The answers to many of the problems I have indicated largely depend on the teaching staff: there must be enough of them and above all there must be an adequate number whose full-time concern is with the library and information science programme. In Macedonia it was heartening that so many excellent specialists from a variety of faculties and disciplines - - computing, statistics, management and the like - - were enthusiastic about the proposed postgraduate programme, but it is of course essential in such a situation that the specialists should have a full understanding of the goals and objectives of the library and information studies programme and that their specialist contributions - whether they be statistics, computing, or whatever - should not simply be a repeat of what they teach their own specialist students, but should be orientated towards the distinctive needs of library and information studies.

My impression is that in Yugoslavia for some time to come, practical realities will dictate that the number of full-time library and information studies staff will be fairly small, that a good deal of the teaching will be done by specialists from other, cognate teaching departments and - very important - that programmes will depend on a good deal of teaching input from senior library and information workers acting as part-time faculty. What therefore emerges loud and clear is that effective coordination of all this disparate teaching input, which of course needs to be closely articulated with part-time student attendance, is absolutely crucial. The role of the Director of the programme is therefore of central importance and it is really essential that the post should be the full-time concern of a Professor who holds appropriately high standing and authority in the parent university. And, moreover, the Director in question needs to combine high academic standing with appropriate library and information expertise.

Now I am well aware that Yugoslavian universities quite properly expect their lecturers and professors to be of very high academic calibre - a doctorate and a strong record of publication are normal prerequisites. Equally, I am aware that in a relatively new discipline such as our own - and one in which the professional component is of at least equal importance to the academic - such people are few and far between. This problem is certainly not unique to Yugoslavia: like other people in this room I have encountered it in many other parts of the world. The obvious and classic solution - the one put to me in Macedonia - is to start the programme up with very experienced expatriate staff while those nationals of the country in question who have been identified as potential teaching staff are getting their doctorates overseas - and at the same time gaining valuable experience and awareness of highly developed library and information systems of all kinds. Twinning and exchange arrangements with suitable overseas library and information studies schools can be useful mechanisms for bringing this sort of thing about, and organisations such as UNESCO and the British Council have a strong record of support for such arrangements.

I have identified building up appropriate staffing establishments as a major problem - probably the major problem. There are others, of course, and not the least of these is language. The great majority of significant publication in our field is in the English language and my impression is that very, very little of it is translated into the languages - note the use of the plural - of Yugoslavia. No doubt like the Dutch and the Scandinavians, the Yugoslavs have accepted this problem as a fact of life, and the use and understanding of English is very high. I would have thought nevertheless that a programme of translations of key works and papers into your own languages was a high priority - albeit one fraught with many difficulties. I would mention again at this point the problems created by extreme shortages of hard currency which means that in addition to foregoing access to many international data - bases, you find that even key hard-copy monographs and journals are very difficult to come by. A different but related question which this gives rise to is whether in a situation in which even basic and traditional library materials - - books, journals, reports and the like - are in short supply, it makes sense to educate your library and information workers for the future on the assumption that they will need to be well versed in the applications of sophisticated information technology. My impression is that you certainly are working on that assumption; and my personal belief is that you dare not do otherwise: the gap that would open up if you did not, would be intolerable and insupportable in the long term. And relatively small as your present application of information technology may at present be, what has been achieved is surely quite heartening.

My final point concerns research in the library and information field. It is my belief that in this field there are great areas in need of research and development work. It is also my belief that any university teaching department worth its salt must engage in research: the mutually beneficial interaction of research and teaching is an article of faith to which universities world-wide quite rightly subscribe. In our field, which is relatively new, non-traditional, in academic terms, and professionally orientated, the need for library and information school staff to engage in research is doubly important: they will not only be more convincing teachers, better equipped for supervising their students theses, and contributing to the development of library and information theory and practice, but they will be establishing and confirming the academic acceptability - and respectability - of their subject. I would hope that those responsible for professional education for library and information work in Yugoslavia would see research as one of their very highest priorities.

PART III
INTERNATIONAL EXPERIENCE AND APPROACHES

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Conference paper

THE STRUCTURE OF LIBRARY AND INFORMATION SCIENCE EDUCATION IN THE UNITED KINGDOM

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Abstract

The present shape, character and direction of library/information science education in the U.K. is discussed in relation to trends in the external environment. Recent changes in course content, coverage and qualifications are described with particular attention being given to the need for improved education in Information Technology and Information Management, at both the basic and post-experience levels. It is argued that the successful development of education and training programmes in library/information studies is largely dependent upon the existence of a solid national library/information infrastructure and a commitment to research within library schools.

INTRODUCTION

As far as this conference is concerned I am in the particularly fortunate position of being able to present two papers. I, therefore, intend to use the opportunity to both describe current developments in the United Kingdom and prescribe strategies for coping with future change. In this paper I shall make a determined effort to suppress my personal views, and concentrate instead on giving you a factual outline of the state, character and structure of professional education and training for library and information work in the UK.

I should perhaps begin by saying something about my background and experience. Unlike many of you I have no experience of teaching in a library school: I have, however, spent considerable time during the last two years looking at trends internationally in education and training for librarianship and information science. My position can best be described as that of a detached outsider - someone with no particular axe to grind.

The information and ideas contained in this paper are derived not only from my own research activities in this general area, but also from a number of significant documents which address themselves to the problems of providing appropriate education and training programmes at a time of rapid social and technical change. In particular, I should like to cite the following: Edward Dudley's report 'Curriculum change for the nineties' (1); Kevin McGarry's review article 'Education for librarianship: a retrospect and revaluation' (2); and the recent discussion paper produced by LISC (the Library Information Services Council) under the chairmanship of Professor Saunders 'Basic professional education for library and information work' (3). In addition, I would refer you to two reports of my own: 'The transition years: new initiatives in the education of professional information workers' (4) and 'The education of library-information professionals: a conflict of objectives?' (5).

THE LIBRARY/INFORMATION INFRASTRUCTURE IN THE UK

Librarianship, like any profession, is shaped and moulded by changes in the external environment. To a greater or lesser extent professional philosophies and practices are conditioned by the prevailing social and political climate, economic constraints and technological developments. The extent to which the profession can deal with the pressures for change and self-renewal will, experience suggests, depend on the strength and sophistication of the existing library/information infrastructure.

The library/information infrastructure in the United Kingdom is, by any standards, well developed. The combined library/information workforce numbers approximately 55,000, of whom 23-25,000 are professionally qualified. Whilst it is common practice to speak of 'the national library system' as if it were a planned entity, it is more correctly described as a "collection of distinct, institutionally-based library systems" which are "clearly interdependent in various ways, but...conceived and operated as relatively self-sufficient, autonomous systems with their own specific objectives" (6). Although there is important library legislation (e.g. the 1964 Public Libraries Museums Act and the 1972 British Library Act), the rich and variegated resources which the UK currently enjoys have come about almost entirely as a result of specific responses to discrete needs.

Nevertheless, the library/information profession in the UK undoubtedly benefits from library legislation, the existence of a genuinely national body (the British Library) and the presence of a variety of regional library bureaux and cooperatives.

In addition, the Library Information Services Council provides a national forum for discussion and a mechanism for channelling the views of the profession to the Minister responsible for Arts Libraries. More

specifically, the educating arm of the profession has benefited enormously from the support and initiatives of the British Library Research Development Department (BLR DD). Familiarity, as the saying goes, can breed contempt, but the library/information profession in the UK is blessed with a particularly solid infrastructure to support its activities - an infrastructure which is the envy of many countries.

Other notable components of the infrastructure are the various professional bodies and associations - Aslib, the Library Association, the Institute of Information Scientists, the Society of Archivists and SCONUL (the Standing Committee of National and University Libraries). These organisations, in their various and sometimes overlapping ways, have contributed greatly to the professionalization of library/information work by acting as providers of education and training schemes and by superintending the educational offerings of the library schools.

VITAL STATISTICS

In the UK there are seventeen library schools offering a variety of programmes (both undergraduate and postgraduate) in librarianship, information science and information studies. The combined annual output of these seventeen schools currently exceeds 1,000. In the main these graduates find employment in institutional library settings (e.g. public, research, special and school libraries), but an increasing proportion is finding employment in the wider information marketplace.

An important feature of the UK scene is that each school is attached to an institute of higher education (univeristy or polytechnic) and accorded full academic status. The fact that education for library/information work is now firmly rooted in an academic tradition has accelerated the professionalization of library work and given practising librarians a security and standing not always shared by their colleagues in other countries.

The successful development of education for library/information work has been further facilitated by the fact that the schools all have full-time faculty. In the largest schools there may be more than thirty full-time academic staff, while, in even the smallest schools, a cadre of six full-time teachers could be expected. As a general rule the full-time staff are supported by a number of part-time specialists, visiting lecturers and service teachers from other academic departments (e.g. management studies, computer science, systems analysis etc.). Thus, even in the smaller schools it is possible to offer a broad-based curriculum and to provide a fairly generous range of electives.

Obviously, however, those schools with a large full-time teaching corps are best equipped to provide the necessary breadth and depth of coverage. Furthermore, a large and diverse faculty ensures that there is a constant exchange of ideas across disciplinary lines, which in turn enriches collective thinking and research. The fact that the majority of UK library school teachers have backgrounds in operational library/information work means also that there is a healthy interaction between academic and vocational values.

One of the spin-offs on anchoring the schools in an academic environment is that they can draw on the collective expertise of the parent institution. Librarianship is an eclectic discipline; one which constantly adds new elements to its core curriculum. In practice it is not always realistic or feasible for faculty members themselves to acquire all the requisite skills and knowledge, and they, therefore, have to tap pools of competence within the univeristy or polytechnic.

The schools' position in an academic environment also encourages a research ethos. Over the years, the British Library Research Development Department has acted as a catalyst, injecting funds and ideas for research, most notably by encouraging the use of on-line and the new technology. Apart from stimulating interest in new techniques and teaching tools, BLR DD has also nurtured research expertise among both academic staff and students. The benefits of this enlightened investment are diffused in due course throughout the professional community at large.

It is, as Professor Saunders notes (7), "an article of faith within the British academic world that a university has a responsibility not just to teach, but to carry out research, to extend the boundaries of knowledge". This article of faith is adhered to by schools of librarianship and information science within the UK. It may be that the importance attached to scholarly research in UK schools is not quite so great as in their US counterparts, but over the last two decades much useful and innovative research has been carried out by both academic staff and students. It would be invidious to single out particular institutions, individuals or projects for special mention, but I should nevertheless like to illustrate the breadth of research activity by citing the work carried out at Sheffield University relating the chemical sub-structure searching and information needs analysis, the research programme in community information counducted by Leeds Polytechnic, Manchester's research into the use of on-line information retrieval services, and the various studies into the library/information needs of ethnic minorities carried out within the Polytechnic of North London.

COURSES AND QUALIFICATIONS

The extent to which educational policy is controlled by central (or regional) government has a profound influence on the character of educational programmes. The UK system, by contrast with those of some other European countries, is relatively decentralised, with the result that library educators have a free hand in determining the shape and character of their curricula.

Although there is a broad commonality of purpose, the schools retain a vigorous independence which is reflected in their orientations, objectives and courses.

In some countries there are clear-cut historical differences between librarians, information scientists, archivists and documentalists. This is not really true of the United Kingdom, and most library schools see themselves as being in the business of turning out students capable of finding employment in a variety of operational contexts. It is not yet the case in the UK that particular schools have become identified with particualr sectoral groupings, though, of course, some have established reputations in certain areas and specialities (e.g. the City University which offers degreee and diploma courses in information science). The UK scene can best be described as a consumer's delight: the prospective student can effectively select the school of his choice (whether on the basis of its academic reputation, its specialities, the calibre of its teaching staff, its geographical location, or whatever).

There are certain drawbacks with this sort of situation. It can be argued that the unplanned approach leads to imbalances in provision when viewed nationally, and sub-optimization of plant and human resources.

The professional qualifications obtainable from the UK's seventeen library/information science schools are extremely varied, ranging from Bachelors degrees at one end of the spectrum to a fully-fledged PhD by research at the other. Most schools offer a mixture of degree and diploma-level programmes, though the Department of Information Studies at the University of Sheffield offers only Master-level programmes and above. At present the bulk of the courses taught in the various schools are broad-ranging, in the belief that introductory professional programmes should aim to give a comprehensive grounding in all aspects of library/information theory and practice. This may be a workable objective as far as mainstream library work is concerned, but the increasing specialisation of information work (mirrored in the array of career opportunities now available to graduates) is creating a need for more advanced and specialised courses.

Looking ahead, there is good reason to believe that existing first degree and one-year postgraduate diploma courses will in time be replaced by Masters-level programmes to take account of changes in the wider information marketplace. The need for information skills coupled with subject knowledge is likely to render the undergraduate programmes obsolete in the foreseeable future. If there is a shift to higher level specialisation, then there may well be a need for rationalization in the number and type of courses on offer. In saying this I am not trying to deprecate first degrees in library/information studies, merely drawing attention to the fact that employers place a premium on information skills allied to subject specialisation.

THEORY vs PRACTICE

Library schools exist to provide vocational education and training. Yet, in the UK (and other countries where library schools are based in universities or polytechnics) there is, inevitably, pressure to adhere to the institutional norms of academe. Library schools have divided allegiance - to the practising arm of the profession and to the prevailing academic ethos. This tension is most often expressed in terms of a conflict between the teaching of theory and practice. Is the library school solely a service agency to the profession providing vocational courses in response to expressed demand and in accord with current manpower needs, or has it a 'higher' responsibility to preserve academic standards and ensure the inculcation of a soundly based appreciation of the theoretical, historical and philosophical foundations upon which the profession is based? In reality, the question does not dissolve into quite such a straightforward dichotomy - there are many shades and stages between the end-points.

Nevertheless, within the UK debate on this issue persists, and an outside observer would, I suspect, be able to determine which schools incline more to the former position and which to the latter. The debate is not, however, a purely theoretical issue: it has real-word referents. In recent years the job prospects for professionally qualified library/information workers have worsened, but this has not (as would be the case in a planned economy) led to significant reductions in the library schools' intake (and output). Those who are advocates of the service role model of library schools would presumably argue that at a time of rising unemployment the schools have a moral obligation to control their intake and to maintain a balance between supply and demand. Those who are opposed to the narrow vocational view would presumably counter by saying that students, provided they have been given the facts on employment prospects, should, if they so wish, be permitted to pursue their studies (for reasons of intellectual stimulation, or whatever).

EXPANDING CURRICULA

Of late a number of UK library schools have changed their names, typically to incorporate or highlight the word information. These titular changes reflect the schools' growing interest in preparing students for careers outside traditional library settings. In some cases, schools have adopted a different approach to the teaching of library and information studies, based on the assumption that the starting point is a 'community of need' rather than a particular set of techniques (e.g. cataloguing, indexing). In this approach to curriculum revision context replaces technique as the core.

Conceptual and pedagogic change of this kind, though interesting, does not guarantee that everything which ought to be included in the curriculum will find its

rightful place. The schools are in an unenviable position in that there are so many candidate subjects and topics for inclusion in their curricula. In particular, the proliferation of the new technologies has spawned a host of new techniques and problems for consideration, and in many cases the schools do not have on-tap the necessary expertise to ensure that the desired level of training and familiarisation can be provided. In some instances it may be necessary for students to take units in other academic departments, or for teaching expertise to be brought in from without until such time that the full-time faculty have acquired the necessary competencies themselves.

Within the confines of both the undergraduate degree programmes and the one-year postgraduate diploma and degree courses it is manifestly impossible to cover in depth the full catalogue of subjects subsumed by the rubric library/information studies. If one thinks of a continuum 'hard-soft', then everything from Artificial Intelligence to library outreach has a right to be considered for inclusion. It seems probable that this pressure will ultimately force some schools to select areas of specialisation and to abandon the attempt to provide comprehensive, generalist programmes of study.

In the final analysis the schools may have little direct say in selecting their primary areas of concern. In the United Kingdom many other schools and departments within higher education are offering degree and diploma programmes in subjects which were (or could have been) considered the territory of the library schools. These include: information technology, publishing, communications media, information systems, information management, information processing, and so on. Until fairly recently the library schools had a virtual monopoly on education for library/information work. This is no longer the case, and the schools are having to compete with other academic departments and private sector organisations to attract students to their courses. Some schools will, no doubt respond successfully to the challenge, but others will have to content themselves with fulfilling their traditional role as suppliers of trained manpower to the core library profession. Recognising this trend, the Association of British Library Information Studies Schools (ABLISS) observed that the schools should take action "to gear student output (and hence intake) to the broad field of information (including libraries and archives) and not to the needs of one particular market" (8).

INFORMATION TECHNOLOGY

The United Kingdom was one of the pioneers of new technology in the library/information science curriculum. With the support, both moral and financial, of the British Library Research Development Department, a number of library schools began to experiment with on-line in the mid 1970s. By the 1980s on-line searching was routinely taught in all UK library schools. The experience garnered during this period has since been used to develop an impressive variety of computer-based teaching packages. Today, microcomputers, word processors, on-line terminals, electronic mail systems and viewdata are used in many library schools.

The difficulty remains one of providing adequate applications experience of the many technologies and associated software in short-duration, highly-pressurised professional education programmes. In practice, it is not always possible to provide the quality and variety of hands-on experience required, or to purchase, lease or gain process to all the hardware and software needed to provide a sound initial training. The difficulty is to some extent exacerbated by the lack of technical expertise among library school staff themselves. I should, however, add that most schools now recognise the need for clearly-formulated and conscientiously applied staff development programmes to ensure that faculty remain abreast of current developments and techniques.

It is nonetheless true that the sheer pace of advances in Information Technology makes it almost impossible for the non-specialist to stay conversant with all the latest trends and developments, and this strengthens the case for establishing close working relations between library schools and other academic departments with specialist skills.

No less important than teaching students about the technology itself is educating them to cope with, anticipate and plan for technical change. Technology, as we know, does not slot into existing functional boxes: it disrupts tradition, alters the division of labour, changes social relationships and organisational structures, and erodes functional barriers. Students need to be taught to manage and live with technology-induced change.

STUDENTS

The environment in which library/information workers operate is changing. Some library school graduates are finding employment outside institutional library settings, as, for example, database designer or information brokers. The skills and knowledge acquired at library school can often be put to good use outside the four walls of the traditional library or information unit. As library/information work is gradually de-institutionalised, the emphasis will shift from the place to the process.

Students must, therefore, be prepared to work in 'libraries without walls' and to accept that the comforting physicality of the library may not always be there in the future. The schools, for their part, have to recognise that the structure of the employment market is changing, and that this demands new skills and

attributes in the next wave of graduates.

In the recent discussion document 'Library and information work in a changing environment' (9), LISC noted that recruits to the profession would, above all else, need to be flexible and responsive to change. The qualities required of the next generation of library school graduates it identified as being: originality, depth of character, motivation, drive, the ability to communicate, problem-solving ability, managerial skills, entrepreneurial flair, the ability to manage innovation, finance and business skills. What we are seeing is a perceptible shift in emphasis from technical skills (e.g. classification) to personal/social skills. As Professor Saunders has, in fact, noted: "a major reorientation...has taken place in much of the work which is carried out in libraries. Traditionally such work was largely concerned with the acquisition of library materials and technical processes such as cataloguing and classification which prepared them for use by readers; this implied essentially a passive and conservationist--type of role, with minimal concern for the use and exploitation of the materials in question. Nowadays, however, the emphasis is heavily on use and service -- on the active dissemination of information for the benefit of users and potential users" (10).

Of course, not all entrants to the profession need to be high-flyers, but there is in the UK a widespread feeling that the profession still does not attract sufficient numbers of individuals of outstanding drive and ability to provide the leadership required in the future.

Recruits to the library/information profession (if I may generalise) are typically female, with a Humanities/Social Science background, not particularly numerate or computerate, and lacking entrepreneurial flair and imagination. If the schools are to net the right blend and mix of talent, then they will have to trawl more widely and assiduously in future.

CONTINUING EDUCATION

I shall say very little about continuing education as the subject will be discussed in its own right at a later stage in the conference. In the UK post-experience training and education is provided jointly (though not collaboratively) by the library schools, the various professional bodies, special interest groups and a number of private sector organisations. In the main, provision is reactive and un-coordinated. Most library schools offer higher degrees on a part-time basis for practitioners to improve their skills and professional knowledge; some are also providers of short courses, workshops and week-end seminars. Short courses are also offered by the professional accociations (most notably Aslib and the Library Association), but in aggregate these only satisfy the needs of a small portion of the total potential market for continuing education nationwide.

The present UK government recognises the need for more and better quality post-experience training, particularly in the field of Information Technology, but todate there have been few noteworthy initiatives in the library/information sector. Among the profession at large there is (and will continue to be) a very real need for lifelong education, but at present we lack a satisfactory, cost-effective mechanism for ensuring that this need is met. Strategies can. of course, be proposed (11), but in the present economic climate even the best conceived ideas often do not get off the drawing board.

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Conference paper

MUCH ADO ABOUT LITTLE - EDUCATION FOR RESEARCH IN LIBRARY AND INFORMATION SCIENCE IN THE NORDIC COUNTRIES

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Abstract

The evolution from librarianship to LIS is briefly outlined showing a powerful trend towards a new conceptual framework for information provision and processing. Against this background, the Nordic library school system is reviewed with emphasis on efforts to go beyond vocational training programs.

Recognizing the strong interrelationship between analytical reviews for policy decisions, R & D work, and education for research, the LIS research situation in Sweden is described as an example of a general complex pattern. The numerous Swedish attempts to design control mechanisms for a coordinated national LIS program and to institutionalize education for research in LIS are presented.

In conclusion it is suggested that the thrust of development lies in the IS end of the LIS spectrum. If correct, librarians, library schools and funding agencies would have to recognize the implications of this statement and the need for active participation in furthering the development of IS, building up a know-how to ensure that significant change in professional roles does not become entirely controlled by technology.

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Conference paper

CURRENT TECHNOLOGICAL DEVELOPMENTS AND THEIR IMPACT ON EDUCATION IN LIBRARY AND INFORMATION SCIENCE PROGRAMS IN LATIN AMERICA

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Abstract

The purpose of this paper is to define conceptually an implementable plan for education in information science programs in Latin America in which current technological trends and their impact are included as an essential subset of the major components of the educational program in library and information science. The aim of the plan is to propose a series of intensive modules incorporated in the library and information science programs, which might be suitable in Latin America environments. The objective of the modules will be to provide a series of intensive courses and experiences dealing with current trends in the organization and management of library and information services. Through this proposed approach the educational programs in library and information science in Latin America might reflect a major emphasis on new techniques of data processing, information management and automation of library processes using newer technology, including microcomputers.

The Latin America information specialist of the future is likely to provide information services much richer and more varied than those offered by many traditional libraries because of the availability of technological and costeffective alternatives. Consequently, the information specialist must be trained for the effective use of new technologies in its local environment.

Educationally, the structuring of a library and information science program must provide significant room for the inclusion of new techniques of information technology and this integration must be flexible enough to allow progressive adaptations to nationally-evolving requirements of the profession as a whole.

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Conference paper

LIBRARY EDUCATION AND TRAINING FOR SUB-PROFESSIONALS IN DEVELOPING COUNTRIES

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Abstract

The sub-professional occupies an important place in the library profession in developing countries. Many countries have established programmes for their education and training. Admission requirements, duration of courses and course content have been discussed in this paper. More similarities can be seen in theses programmes because they had first been based on European (mainly British) or American models. These programmes are not yet fully geared to local requirements. There are problems in teaching and also in the recruitment for jobs at paraprofessional level. Several suggestions have been made here to improve the teaching programmes and the career prospects of the subprofessional.

This paper attempts to examine the current trends in education and training of the 'grassroots-level' librarians in some of the developing countries - mostly in Africa. More will be said therefore, about the traditional library education and training and the attendant problems. Only the courses either full-time or part-time and conducted by educational institutions and organizations and which lead to the writing of examinations and award of certificates are considered. In service training and short term training schemes have been excluded. Some suggestions have also been made to improve the existing models and facilitate the upward mobility of the sub-professional.

PLACE OF THE SUB-PROFESSIONALS IN LIBRARY AND INFORMATION SERVICE

The middle level support staff in library and information services who perform a variety of duties are identified by a number of terms - para-professionals, semi-professionals, sub-professionals, library assistants, library media technical assistants and library technicians /1,2/. We should note however, that they form the majority, if not a significant portion of personnel in the library profession in developing countries /3/. It is doubtful whether the duties performed by sub-professionals have been duly recognized in all these countries. An objective view of the nature of library service and the type of work done by a sub-professional in a developing country has been given by Marie Benoit when she discussed the library training programme in Mauritius.

> *'In Mauritius many government ministries and departments, the national broadcasting system and newspapers have if not libraries, at least reading rooms for the use of in-house researchers and decision makers as well as the general interested public. These libraries and information centres usually began with a shelf of books and a few files of documents in the charge of a clerk, typist or messenger. As the nation develops these governmental and quasi-governmental bodies are expanding and their need for information is growing proportionately. The clerk who administered the original shelf of books has moved with the collection, which is now housed in its room or building, and has actually become if not a 'librarian' at least an 'officer-in-charge of a library'. By virtue of seniority and tenacity, he finds himself having to serve a clientele and sometimes to administer a budget and perhaps a support staff, in spite of the fact, that he has had little or no professional guidance or training.'/4/*

This type of library in many places is administered by a sub-professional because 'it is now recognized that many tasks formerly performed by librarians can be performed as well by trained para-professionals...'/5/

Most of the countries with which we are dealing have undergone changes during the past two decades or are in the process of making rapid changes in socio-economic spheres. A good number of them have had agro based economies and are now moving towards industrialization. For example, India is one of the emerging industrial nations in Asia today. South Korea, Taiwan and Hong Kong have established themselves as manufacturing nations. The information needs of these countries have changed from simple reference queries at libraries to complex reference and research problems. This can be seen in the wide use made of public and special libraries in these countries today where many sub-professionals are employed.

During the last two decades the sub-professional has

assumed an increasingly important role in library services /6/. It is the sub-professional who attends to most of the public services and technical services in public and school libraries. In the case of a small public library he is the only 'librarian' available in the library who has to attend to all the tasks from management of the library to the maintenance of the building.

EDUCATION AND TRAINING FOR THE SUB-PROFESSIONAL

In the developing countries a lot of progress has been made with regard to local library education and training in the past two decades; new library schools have been established, new courses in library and information science have been mounted and in-service training schemes instituted while senior personnel were sent abroad for further education and training in library and information science. With these developments it has become clear that the best way to educate and train library personnel is to provide these facilities locally. And if these facilities are not found in their own countries it is desirable to send them to a similar developing country where education and training programmes are available. What is meant here is the basic training. This line of action has been accepted at many international meetings and conferences because of the obvious benefits it brings to the trainees.

The reasons for making available local training programmes are:

i) Admission requirements can be adjusted to the educational standards of the country.
ii) Courses can be formulated taking into consideration the specific library and information needs of the country.
iii) Students can study in a harmonious environment.
iv) Lectures can be delivered in a language with which the students are familiar, provided such facilities as lecturers who can teach in vernacular languages and text books are available.
v) Concepts and theories could be explained using local examples where possible so that students would be able to understand them easily.

LIBRARY AND INFORMATION SCIENCE PROGRAMMES

Library services and education for librarianship as found in the developing countries today are imports from the West. It is therefore natural that the 'developing countries were forced to implement existing models (French, British, American), if they were to begin to produce librarians in a defensible period of time'/7/. When ten foreign students (from developing countries) at the Graduate School of Library and Information Science, University of Pittsburgh were interviewed in 1978 they 'confirmed the obvious fact that all of the programs and their curriculums were originally based either on the American or European (generally British) model and that few special features were taken into account in the original formulation'/8/. These post-graduate students had obtained a degree in library science or had been teaching the subject in their native countries. Basically this criticism applies to almost all the courses-professional and sub-professional alike in library and information science available in the developing countries today.

Our main concern here is the sub-professional courses. Most of the library schools attached to universities, polytechnical institutes, and other organizations in developing countries offer non-degree Certificate and/or Diploma programmes. Among those offering Diploma are Ibadan /9/, Zaria /10/, Ghana /11/, Kampala /12/, Addis Ababa /13/, Zambia /14/ and Botswana /15/. Certificate courses are offered by Ghana /16/, Kampala /17/ and Botswana /18/. In Kenya /19/, Tanzania /20/, Mauritius /21/ and Zambia /22/ certificate courses are offered not by universities. In the Pacific, Papua New Guinea Administrative College /23/ in conjunction with the university at Port Moresby offers Certificate courses. In Sri Lanka the Sri Lanka Library Association offers First and Intermediate Examination Certificate courses. With SLLA's Final Examination certificate a person is considered to have attained professional level and if he has higher educational/academic qualifications his chances for promotion or appointment to a higher position are great.

ADMISSION REQUIREMENTS

Teaching programmes for sub-professionals are based on a pre-requisite of secondary schooling, normally 5-6 years in secondary school. In Ibadan /24/ and Zaria /25/ possession of the West African School Certificate or its equivalent is regarded as the minimum qualification for admission. Ibadan requires a candidate to have credit passes in 5 subjects including English language and in addition he has to sit an admission test consisting of two papers each of one hour duration /26/. Ibadan also considers candidates who have mature age entry qualifications and long library experience. Nevertheless the credit grade in English is required. This type of admission requirement is also found in Sri Lanke where a candidate has to possess G.C.E. Ordinary Level Certificate with 6 passes including 3 credits at one and the same sitting with English as a subject * or passes in 5 subjects with 5 years library experience /27/. Minimum admission requirements for Kampala and Addis Ababa are more or less similar to those of Ibadan and Zaria. Ibadan, Addis Ababa and Botswana require some previous library experience. In the case of Ibadan the requirement is at least one year, but preferably two

* For those who sit the exam. in Sinhala or Tamil medium.

years of full-time library employment /28/. Zambia requires a minimum of 4 G.C.E. Ord. level passes including one pass in English /29/.

In Ghana it is 3 passes at Ord. level including English, and the candidates have to sit a special entrance test /30/. The admission requirement for Papua New Guinea course is one year of High School /31/.

DURATION OF COURSES

Generally the Certificate and Diploma courses run from 6 months to 2 years. Ibadan, Zaria, Ghana, Kampala and Zambia run 2 year Diploma courses. The Addis Ababa Diploma course is a 1 year full-time programme and so is the Botswana Certificate course. Sri Lanka courses are 1-2 years on two levels, and Papua New Guinea's Library Assistants Course is of 9 months' and the Library Officers Course is of 2 years' duration.

COURSE CONTENT

On the course content it has been observed that there are four core courses common to most of the sub-professional programmes:

These are:

1) Library organization and administration
2) Classification and cataloguing
3) Library routines
4) Bibliography and reference work.

We find that these courses are not named in the same way at every place. Although the course content is more or less the same these courses do not bear or share common course titles or names. Sometimes they are integrated or combined with other courses. Sometimes the nomenclature is different. Some places have a course entitled 'Library and society' as in Ibadan, Zambia and Botswana, or 'Introduction to librarianship' as in Ghana. Some have 'communication skills' as a separate course or combined with another as in the case of Papua New Guinea's Library Assistants Certificate course and Zambia's Diploma Course.

The practicum is an important segment of all the sub-professional courses. The duration of this too varies from place to place. Sri Lanka course requires 2 weeks practical training in a recognized library before the examination. Zambia requires a six week period of library practical training, working full time in an approved library at the end of the first year. Botswana has prescribed 4 weeks of practical assignment.

Examinations are held at the end of the academic year. In many places the question papers are of 3 hour duration.

PROBLEMS IN EDUCATION AND TRAINING

It is discernible that there are more similarities and less dissimilarities in the sub-professional courses offered by various countries. As a general criticism it has been said that the library education in developing countries is geared towards training of librarians, 'to serve the elite' /32/. It has also been stated that 'many library education courses at sub-professional level contain watered down and diluted aspects of full vocational courses drawn up for professionals'/33/. Then there is also the assumption that 'library education curriculums in less developed countries have generally been inappropriate copies of curriculums of developed nations' /34/. It is true that the majority of the developing countries have so far not been able to re-shape the curricula to reflect the library situation in their countries. This may not be possible until and unless these countries have a good number of their own dedicated senior professionals with higher qualifications and experience.

It has also to be borne in mind that it is not so easy to re-shape completely the Western models or substitute them with local ones. For example the classification schemes mostly used in the developing countries such as the D.D.C. and the L.C. are American products and the cataloguing rules for the most part are influenced by European (specially English) and American concepts. Moreover, organizations like IFLA and Unesco are attempting to establish internationally acceptable standards in those fields. Nevertheless it is necessary to formulate codes of national cataloguing rules within the framework of acceptable international rules where necessary to suit cataloguing of local publications /35/. For example there are problems in developing countries in the use of surname as entry element /36,37/. In the sphere of classification certain changes have already been made with regard to D.D.C. schedules in some countries where they were found to be inadequate for classifying local materials. In Sri Lanka the schedules in 200, 600, 800 and 900 classes have been expanded to suit the local requirements. Another subject which needs local emphasis is reference service and bibliography. Local reference material in relation to the information needs of the countries concerned have to be included in their courses.

It has been suggested that the sub-professional courses be conducted in technical colleges and non-university institutions instead of running them in universities and institutes of higher learning /38,39/. Whatever the case may be it is clear that we have to develop curricula suited to the local needs. The curriculum in general also ought to be geared to the long term demands of national development /40/.

A major problem the developing countries are experiencing at the moment is the lack of text books in local languages. It has been noted that the foreign textbooks that are in use do not relate to the realities of library operations in the Third World /41/. Even where

professional education is available in English it may be the second or third language in a country and therefore the rate of reading and level of comprehension of students may be low. Teachers, therefore have to use teaching aids - handouts, transparencies etc. more often than is the case at normal university level /42/. It is to avert this situation at least to some extent that certain countries have stipulated a pass or credit in English language at the G.C.E. O' level examination. If not they have to appear for a special English test.

It has been already noted that the importance of training intermediate grades in developing countries cannot be over-emphasized. By experience, the writer is aware that for certain positions in a special library a sub-professional requires other traits and skills. For instance, a knowledge of medical terminology may be required in a medical library, and a strong backgound of general science in a science library. Sometimes, therefore the sub-professionals are selected after consideration of these factors. It is desirable and sometimes necessary to have a wider background in general education, humanities and social sciences to work efficiency in a small public library or a school library. Inclusion of such subjects could be seen in the course offered by Addis Ababa /43/. In addition, a knowledge of typing would be an added advantage which has already been cincluded in the curriculum of the Papua New Guinea programme /44/.

CAREER PROSPECTS

Although the education and training of the sub-professional has been taken with seriousness in the developing countries, they do not all provide career prospects for their products. This is true of Diplomates who qualify from the East African School of Librarianship in Kampala. It has also been found that they do not receive the same recognition in status by various types of libraries /45/. This limitation of career prospects and difference in recognition of status can lead to frustration which in turn can undermine the enthusiasm of the sub-professional to improve his knowledge and skills.

SUGGESTIONS FOR IMPROVEMENT

The following suggestions are made for the improvement of the existing courses and the career opportunities of the sub-professional.

1. Re-structuring of the curricula. This needs some careful thinking and a decided approach since it has to be done after considering the country's library infrastructure and information needs and the growing importance of library technology today. In a good number of developing countries the sub-professionals may not be required to handle sophisticated library equipment just yet. In each country the education programme could provide students with opportunities to gain knowledge in using the 'technology' that is available in its libraries. Nevertheless the programme ought to accommodate new developments in the field of library technology as and when necessary. It is very important today that every sub-professional should know to handle reprographic equipment, microforms, microform readers and audio-visual equipment. If adequate instruction in library technology together with a background in broad general education could be provided to the diploma students it would be ideal. Specialisation in library service of one's choice could be done in the second year or through half courses.
2. Standardisation of duration of the courses. The duration of the courses termed as Certificate and Diploma varies from 6 months to 2 years. Certificate course can be from 6-9 months duration while the Diploma should run for 2 years. This is the normal practice in many schools at present.
3. Production of textbooks locally. Whether library education is imparted in English or local languages it is advisable to have some books in core courses produced locally. This becomes evident when we consider the difficulties encountered in teaching cataloguing and classification and reference work. This problem arises when there is a substantial body of national literature in local languages. Books dealing with problems peculiar to the countries or regions giving local examples in these subjects could be produced locally. These can be basic text books. Here again we need qualified and experienced local staff.
4. Translation of selected text from English into local languages.
5. Preparation of supplements to Cataloguing Codes and Classification schemes.
6. Standardisation of recruitment levels for jobs especially for those who pass out from regional schools. If there are successful candidates from a regional school such as EASL the countries attached to the school should have the same levels of recruitment and within a country itself the levels should not vary.
7. Provision of continuing education programmes for vertical mobility. There should be avenues for sub-professionals to better their prospects specially to gain full professional qualifications. We see certain developments in this field. In Zambia, for instance, there have been some moves to allow the sub-professional Diploma holders to do a degree course while exempting them from certain subjects at degree level. In Sri Lanka if the person has a university degree and if he passes the Final Examination of the SLLA he becomes a full professional. We should not

take the sub-professional courses as 'terminal' but as a link to professional programmes for those who do well in the former and who want to better their career prospects. The Diploma holder has selected librarianship as his career for the rest of his life. We as library educators, therefore have a duty to look after his welfare provided he is determined to improve his lot.

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Conference paper

CONTINUING EDUCATION AND TRAINING: the international experience of the British Council

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Abstract

The author describes the involvement of the British Council in continuing education and training programmes. Three main strands of activity are analysed and discussed:

1. International courses in Britain
2. In-service courses for British Council staff
3. Basic training for staff of institutions in developing countries

A review is given of experience gained in the last 10 years in organising international courses on major and topical themes; of keeping the Council's own staff up-to-date with developments inside and outside the Council and with the provision of training for those without formal qualifications or bibliographical experience in developing countries.

Seminal influences which affect such a training pattern are discussed and some suggestions made which might be relevant to others facing comparable problems.

Alternative views on education vary between marked extremes, such as:

> *"Human history becomes more and more a race between education and catastrophe" (H.G. Wells)*
>
> *or*
>
> *"Soap and education are not as sudden as a massacre, but they are more deadly in the long run" (Mark Twain)*

We would precede the word education with the adjective continuing, add on for librarianship and information studies and get off to a singularly unpromising start. Instead I propose to deal with some of my own experiences and attempt, in the main, to focus upon a topic which is itself undergoing continuing change and therefore liable easily to slip out of focus.

1. DEFINITION

From the beginning we have a definition problem which is rapidly exacerbated if we make a search on an on-line data-base. For our purpose, do: in service training, continuing education, adult education, part-time professional education, further education, internal staff training, post-initial qualification, attitude training, staff development, have the same meaning? Clearly not, but the variety of the terms we use indicates the over-lapping attitudes and interpretations which distort any attempt to analyse with accuracy. It is always easier, and often better, to take an existing definition rather than to construct one afresh, and I was guided by this principle when I decided to abide by the general definition of continuing education given by the Secretary of State for Education in May 1982, which reads:

> *"Continuing education is everything other than initial education, the sustained preparatory period of formal study to whatever level completed before seeking main employment. Continuing education ranges from the most basic levels of study to postgraduate and may provide opportunities to acquire basic skills and knowledge; a second chance to follow higher or further education courses, which people were unable or unwilling to undertake on leaving school; opportunities to up-date or increase skills relating to employment in mid-career, or a means of preparing for changes in life style and personal circumstances; or developing talents interests and abilities. No one, however long or comprehensive their initial education, can hope to or should expect to acquire during it all the skills and knowledge they will need during a working life of perhaps 40 years".*

To my mind it has been both a strength and a weakness of our profession that we have resisted change and that librarianship has been too often regarded as a self-evident faith rather than a responsible service which has to compete for resources. The above definition, if applied to librarianship recognises the need for reform - some would say long overdue - and points the way professional education can be expected to go in future. We have therefore a basic

proposition which is rooted in the needs of the profession and I foresee three distinct types of user:

1.1 Professionally qualified staff who wish to improve their qualifications or add to their professional experience, perhaps as a part of their career development or because of a promotion or transfer to an unfamiliar post.

1.2 Non-professional or support staff who need up-dating on new services, new equipment or an expanded system.

1.3 Personnel with an interest in information work but not directly involved in day-to-day operations eg, senior managers, scientists, academic staff, architects, etc, etc.

The first two types are closely related; the third, staff who "need to know about" rather than to operate systems, is linked by a common denominator in as much as the cadre of teachers may organise the training of all the staff involved.

2. THREE LEVELS OF EXPERIENCE

British Council involvement with continuing education has taken three very distinctive and easily identifiable forms:

2.1 International Courses/Seminars
2.2 In-Service training for our own staff
2.3 Basic training for staff of institutions in developing countries.

An Exchange Unit is responsible for initiating, co-ordinating, designing and evaluating the various activities which run between the extremes of, on the one hand, advanced-level seminars held in Britain for an international audience of small managers, and on the other hand, basic courses in developing countries for untrained librarians. I propose to isolate the three types of course and deal with each one separately in the sections which follow.

3. INTERNATIONAL COURSES/SEMINARS ORGANISED BY THE BRITISH COUNCIL

Of most interest to this audience will undoubtedly be the experience of the British Council as a sponsor of international courses. Although we have organised such courses for 20 years or more, I have used as a sampling the courses we have given in Britain in the last 10 years. They are 20 in number and are listed in Appendix I with a note on the total number who attended as well as a breakdown of the proportions drawn from senior and middle management.

From Appendix I it is obvious that senior management showed the greatest interest. In fact 90% of these who attended were drawn from delegates who were disignated: Chief Librarian, Librarian, Deputy Librarian or Senior Lecturer etc, the remainder gave titles such as, Assistant Librarian or Lecturer. Given the relatively high cost of joining the courses and the importance of the themes dealt with, the proportion is nor surprising.

Appendix I(a) shows the variety of courses divided by the main theme; most courses were either general or managerial in character, or specialist.

Appendix I(b) lists the countries represented at the various courses thereby indicating national interest, whilst Appendix I(c) lists countries alphabetically and gives the numbers who attended. The same Appendix shows a gently surprising spread of interest as the countries which have sent most delegates are, in ranking order: Nigeria (40), Malaysia (28), South Africa (26), Norway (18), Denmark (16), Netherlands (15) and India (13). Appendix I(d) lists in alphabetical order those countries which have sent 10 or more candidates and makes a marginal comment. It is interesting that European countries use the general more than the specialist courses, the reverse is true of Africa, the Middle East, Asia and Brazil. Other patterns which are discernable indicate the popularity of a course related to an area along the following lines:

Western European Countries

- Young people and reading
- Library management research in Britain
- Library planning and design
- Educating library users
- Information networks
- New information Technology and libraries

African Countries

- Computer application in libraries
- National Library services
- Management of archives
- Educating library users

Asian Countries

- Education for librarianship and information science
- Library resources in higher education
- New information technology in libraries

4. TRAINING THE STAFF OF THE BRITISH COUNCIL IN LIBRARIANSHIP AND INFORMATION SERVICES

The British Council is faced with the massive task of providing in-service training for approximately 540 staff who man the libraries overseas and are citizens of the host country. There are, of course, local training courses which the staff can attend and seminars, conferences and workshops which make a useful contribution. But Council libraries are unique by virtue of their purpose, their clientele, their book-stock, their dispersal and the variations between them and, consequently, there has to be some training which, whilst

taking account of the wide variations, helps to unify our activity. Managing the giving and the receiving of training is both expensive and complicated. However, some ground rules have evolved out of our experience. Systematic training begins with determining:

- what abilities the present job and career development requires;
- what abilities the job-holder already has;
- how training needs can be most effectively met on-the-job or off-the-job;
- how the effectiveness of training received can be validated.

Participants are selected mostly from our middle grades, they are the largest groups in numbers, and are chosen on the basis given above. Recognition is given to previous training, managerial responsibility and experience. In recent years there has been growing emphasis on management and the introduction of new methods, audio-visual materials, book promotion etc.

Since 1980 courses have been held in:

Malaysia, Egypt, Paris, Malawi and Mexico.

Each year an additional course has been organised in Britain; for two years the course was contracted to the College of Librarianship Wales, in 1983 we resumed responsibility for the course and will do so again in 1984. Those attending the courses are asked to list the subjects upon which they would like instruction, their preferences are for:

1. Information work
2. Promotion: user services
3. Educational enquiries
4. Management of resources

5. & 6. Selection of materials, Automation

7. Subject or specialist services
8. Staff management and training

Although only too well aware of the difficulties we face, we have attempted to impose a structure upon the courses and to build upon experience. We have, however, to recognise that the grade and background experience of the staff together with their fluency in English have exerted an influence we could not ignore. Our course organisers have had, therefore, to keep instruction flexible and resist the temptation to force the pace and adhere rigidly to the time table. A useful basic exercise has been to encourage participants to devise a plan of action for the future, a purpose which has helped staff to concentrate on practical means of reform and to relate instruction to their own libraries. A typical structure would incorporate:

35% discussions
23% tasks/lectures
13% visits
10% a/v presentations
8% exercises
7% talks by outside speakers
4% routine administration

Positively monitoring the course and obtaining constructive feedback has proved very difficult. In a nutshell, we have found it best to concentrate on only the smallest number of topics and to tackle them as thoroughly as possible, and to balance this selective approach by allowing staff adequate time to discuss the practical problems they face in day to day operations. A formal monitoring scheme cannot take into account all the widely varied local circumstances or priorities and ultimately we depend upon the reactions of the staff and the response of their line managers when the staff return to post. From both have come enthusiastic response and testimony to progressive improvement in services which can be directly attributed to the courses.

5. BASIC TRAINING FOR THE RECIPIENTS OF DONATIONS THROUGH THE BOOK PRESENTATION PROGRAMME

The Book Presentation Programme was set up in 1971 to help overcome the chronic shortage of essential books in the libraries of many educational and other institutions in developing countries. In order to maximise the use made of the books and, on occasion, to help with the selection of the most appropriate titles, it was decided to organise simply basic-training courses which assumed those attending the course had neither very little by way of familiarity with the vast range of titles available through British publishers, nor with simple techniques of exploiting the contents of the books when they were received.

Nearly all the courses are very basic and include similar elements, such as:

- book selection
- cataloguing and classification
- reference and information work
- user requirements

One or two have been slightly more specialist, for example in Peru, and some have included specialist school library training and the encouragement of reading. Participants tend to be drawn mostly from library assistants with a sprinkling of school teachers; on most courses the participants have had widely varying levels of experience, education, experience and fluency in English. The feedback has been overwhelmingly favourable with frequent requests for follow-up courses and the topics they should tackle. A list of the courses, their venues, dates and brief comments is given at Appendix II.

6. CONTINUING EDUCATION: THE CHANGING ENVIRONMENT

Galileo, the great 17th century Italian mathematician and astronomer, is said to have had an argument with some of the learned doctors of Padua University over his claim to have discovered that the planet Jupiter had moons. Galileo saw the moons through his telescope. The doctors, who had all read the works of Aristotle knew that Jupiter had no moons. Galileo invited them to look through his telescope and see for themselves, they refused on the grounds that this would be a waste of time. In some ways the training and continuing education of librarians has been determined by academics in the tradition of the Padua doctors. Texts have been given great weight; the experience of practitioners (the equivalent of telescopes) has been ignored. The conflict between the Padua doctors and Galileo was really the conflict between two different kinds of research, field observations and documentary research. Such a conflict, ideally, should not exist since the two methods can produce results which neither can produce on its own; and in recent years increasingly intelligent use has been made of the techniques of teachers, managers, economists, engineers and workers in related fields in order to improve our own methods. It therefore comes as no surprise that the topics most popular with participants on our international courses are:

Management
Economics
Technology
Research
Education

as these introduce the "new" elements which older practitioners may have missed in their formal or initial education.

One of the most significant changes in the British use of short courses for continuing education has been the growth of courses involving computers and on-line services. Appendix III contrasts courses available in 1973 and 1984; the data shown is not compiled from the same sources and some minor omissions may have been made, however the increase from 3.7% to 31% in courses in information technology is indicative of the major and growing demand. Another feature not shown in the Appendix, which emerged in its compilation, is that courses in 1984 were far more subject specific whilst at the same time, embracing a greater variety of topics. All of which confirms a general impression that the profession is becoming more 'professional' and that skills are now being called into play which were unknown 10-20 years ago. The day when a Senior Library Manager could be expected to be familiar with most routines, largely because they changed little, is passing. Continuing education courses demonstrate vividly the metamorphosis in managerial skills and attitudes, the time being devoted to them and the importance of the role they play.

Appendix IV contrasts the organisers of courses in 1973 with those in 1984. A major change has taken place whereby professional bodies or commercial organisations have gradually come to dominate the scene at the expense of the academic institutions, which have dropped from directing 56.6% to only 8% of all courses. In view of their prestige, resources, equipment and staff, as well as the financial pressure under which they operate, this gradual withdrawal from a potentially profitable and influential market is a rather surprising trend. Equally significant is the manner in which the gap they have left has been filled, and the increase in the total number of courses from 53 in 1973 to 87 in 1984.

7. CONCLUDING REMARKS

For the most part, these remarks relate to developing countries. Reasons which impede the adoption of continuing education include:

Absence of any national policy
Absence of any institution to provide courses
Absence of staff with necessary skills/expertise/experience
Lack of general awareness of manpower planning needs

Employer's attitude to:

- cost of course
- time that staff will be absent
- relevance of training to institution's needs

Participants attitude to:

- cost, if he has to bear any part of it
- qualification, is it marketable?
- prestige of attending course

Some consideration should be given to these impediments and the related problems at the course planning stage.

7.2 Countries without formal library/information training courses might investigate the creation of a school for continuing education. There is no evolutionary law which governs the developmental sequence from full-time to continuing education and a small school could link post experience training provision with applied research, consultancy work, the design of training modules and the demonstration of equipment. For countries of the size of Hong Kong, Singapore, Malawi, Sierra Leone etc, where there seems little justification for a full-time degree school, a small, flexible school devoted to continuing education might be viable and would

certainly be sensitive to local strengths, weaknesses and needs.

7.3 Librarianship and information work has become increasingly an "experimental science". In this process those responsible for the education of the profession have been compelled to become more flexible and to examine innovative methods of meeting the new challenges. In these times of rapid change all our experience indicates that a carefully considered programme for continuing education is vital at international, national, institutional and individual levels.

APPENDIX I

Courses

(1) Library management research in Britain 11-24 November, 1973. Attendance 18. Senior management 16 (88%) Middle Management 2 (12%)

(2) Young people and reading 22 June-4 July 1975. Attendance 24. Senior management 19 (79%) Middle Management 5 (21%)

(3) National Library Services 27 February-12 March 1977. Attendance 23. Senior management 22 (96%) Middle Management 1 (4%)

(4) Library planning and design 9-21 October 1977. Attendance 33. Senior management 31 (94%) Middle Management 2 (6%)

(5) Computer applications in libraries 9-27 July 1978. Attendance 25. Senior management 22 (88%) Middle Management 3 (12%)

(6) Information sources on pollution 13-25 May 1979. Although this was basically a science course, 3 Norwegian librarians attended (all senior)

(7) Library planning and design 23 September - 5 October 1979. Attendance 31. Senior management 27 (87%) Middle Management 4 (13%)

(8) Library development planning 7-19 October 1979. Attendance 28. Senior management 26 (93%) Middle Management 2 (7%)

(9) Information networks 6-18 January 1980. Attendance 16. Senior management 14 (88%) Middle Management 2 (12%)

(10) Computer applications in libraries 3-22 August 1980. Attendance 16. Senior management 14 (88%) Middle Management 2 (12%)

(11) Management of archives 21 September - 3 October 1980. Attendance 28. Senior management 28 (100%)

(12) Educating Library users 21 September - 3 October 1980. Attendance 26. Senior management 22 (85%) Middle Management 4 (15%)

(13) Education for librarianship and information science 28 April - 11 May 1981. Attendance 22. Senior management 16 (73%) Middle Management 6 (27%)

(14) Library Resources in higher education 14-26 March 1982. Attendance 35. Senior management 34 (97%) Middle management 1 (3%)

(15) Management of library and information services 27 June - 9 July 1982. Attendance 13. Senior management 12 (92%) Middle Management 1 (8%)

(16) The role of libraries and information services in national development 5-11 September 1982. Attendance 17. Senior management 17 (100%)

(17) Educating Library Users 3-15 July 1983. Attendance 20. Senior management 17 (85%) Middle Management 3 (15%)

(18) New Information Technology in Libraries 3-20 July 1983. Attendance 25. Senior management 22 (88%) Middle Management 3 (12%)

(19) Archive administration 4-16 September 1983. Attendance 28. Senior management 25 (96%) Middle Management 1 (4%)

(20) Modern developments in medical librarianship 23 October - 4 November 1983. Attendance 26. Senior management 22 (85%) Middle Management 4 (15%)

APPENDIX I (a)

(a) General/management courses:	
1,3,4,7,8,9,15,16	*(8)*
(b) Specialist courses:	
2,5,6,10,14,18,19,20	*(9)*
(c) User Education	
12,17	*(2)*
(d) Education for librarianship	
13	*(1)*

APPENDIX I (b)

Nationality of participants

Course 1. *Commonwealth: Canada 1. Ghana 1. India 1. Malaysia 1. Sierra Leone 1.*
Foreign: Belgium 2. Brazil 1. Finland 2. W. Germany 2. Japan 1. Mexico 1. S. Africa 2. Turkey 1. USA 1.

Course 2. *Commonwealth: Australia 1. Canada 1. Ghana 1. Nigeria 3. UK 1.*
Foreign: Czechoslovakia 3. Greece 1. Jordan 1. Netherlands 1. Norway 2. Sweden 3. Tunisia 1. USA 4.

Course 3. *Commonwealth: Australia 1. Canada 1. Ghana 1. Jamaica 1. Nigeria 3. Sierra Leone 1. Trinidad and Tobago 1. Zambia 1.*
Foreign: Brazil 1. Czechoslovakia 1. Iran 1. Italy 1. Ivory Coast 1. Netherlands 3. Norway 2. Poland 1. S. Africa 1. Thailand 1. Turkey 1.

Course 4. *Commonwealth: Australia 1. India 2. Jamaica 1. Malaysia 1. Mauritius 1. New Zealand 2. Nigeria 2. Singapore 1. Trinidad and Tobago 1.*
Foreign: Austria 2. Brazil 1. Denmark 2. Finland 2. W. Germany 1. Iran 1. Italy 1. Jordan 1. Mexico 1. Netherlands 3. Norway 3. Portugal 1. Saudi Arabia 2. S. Africa 1. Spain 1. Tunisia 1. Venezuela 1.

Course 5. *Commonwealth: Australia 1. Canada 1. Jamaica 1. Kenya 1. Malaysia 1. Nigeria 4.*
Foreign: Brazil 1. Denmark 1. Iran 2. Italy 1. Mexico 1. Netherlands 1. Norway 1. S. Africa 3.

Course 6. *Norway 3 (see notes)*

Course 7. *Commonwealth: Australia 3. Canada 1. Jamaica 1. Malaysia 2. New Zealand 1. Nigeria 4 Trinidad and Tobago 1. UK 1.*
Foreign: Austria 3. Denmark 2. Egypt 1. Israel 1. Kuwait 1. Netherlands 2. Norway 2. S. Africa 1. Switzerland 1. Venezuela 1.

Course 8 *Commonwealth: Australia 1. Botswana 1. Belize 1. Ghana 1. Guyana 1. Kenya 1. Malaysia 1. Nigeria 5. Swaziland 1. Trinidad and Tobago 1. UK 1.*
Foreign: Austria 3. Denmark 2. Egypt 1. Mexico 1. Morocco 1. Netherlands 1. Pakistan 1. Thailand 1.

Course 9. *Commonwealth -*
Foreign: Argentina 1. Austria 1. Denmark 2. France 2. W. Germany 4. Italy 1. Mexico 1. Norway 1. Poland 1. S. Africa 1. Turkey 1. Venezuela 1. Yugoslavia 1.

Course 10. *Argentina 1. Denmark 1. Japan 1. Jordan 1. Malaysia 3. Nigeria 3. Norway 2. Portugal 1. Saudi Arabia 1. S. Africa 1. Syria 1.*

Course 11. *Australia 1. Botswana 1. Canada 1. Colombia 1. Cyprus 1. Ethiopia 1. Finland 1. India 1. Iraq 2. Jordan 1. Kenya 3. Lebanon 1. Malawi 1. Malaysia 1. New Zealand 1. Netherlands 2. Nigeria 3. Senegal 1. S. Africa 1. Thailand 1. Zambia 1. Bermuda 1. Liberia 1.*

Course 12. *Austria 1. Canada 1. Denmark 3. W. Germany 1. Greece 1. Jordan 1. Kenya 2. Malaysia 2. Nigeria 4. Norway 1. Portugal 1. Qatar 2. S. Africa 1. Spain 1. Turkey 1. Zambia 1. Sierra Leone 1.*

Course 13. *Austria 1. Botswana 1. Brazil 2. France 1. Hong Kong 1. India 2. Lebanon 1. Malaysia 1. Morocco 1. Netherlands 1. Nigeria 1. Philippines 1. Saudi Arabia 1. Spain 1. Tanzania 1. Thailand 1. Tunisia 1. Turkey 1. Uganda 1. Yugoslavia 1.*

Course 14. *Australia 1. Botswana 2. Brazil 6. Canada 2. W. Germany 1. Ghana 1. India 1. Italy 1. Jordan 1. Kenya 1. Malaysia 4. Netherlands 1. Nigeria 4. Philippines 2. Portugal 1. Saudi Arabia 2. Spain 1. Thailand 2.*

Course 15. *Brazil 3. Denmark 1. Finland 1. Indonesia 1. Iraq 1. Italy 1. Jordan 1. Malaysia 2. Netherlands 1. Nigeria 1. Norway 1. Philippines 1. Portugal 1. S. Africa 2. Yugoslavia 1.*

Course 16. *E Jerusalem 1. Ghana 1. India 1. Indonesia 1. Jordan 1. Malaysia 1. Morocco 1. Netherlands 1. Nigeria 1. Philippines 1. Portugal 2. S. Africa 2. Spain 2. Venezuela 1.*

Course 17. *Australia 1. E. Jerusalem 1. Egypt 1. W. Germany 1. Guyana 1. Jordan 2. Malaysia 4. Nigeria 4. Norway 1. Portugal 1. S. Africa 2. Sweden 1. Thailand 1. Zimbabwe 1.*

Course 18. *Denmark 1. Greece 1. India 3. Italy 2. Jordan 1. Luxembourg 1. Malaysia 3. New Zealand 1. Poland 1. Portugal 2. Singapore 1. S. Africa 3. Turkey 1. Yugoslavia 3.*

Course 19. Australia 2. Bangladesh 1. Botswana 1. Canada 1. E. Jerusalem 1. Egypt 1. Fiji 1. Indonesia 1. Israel 1. Jordan 2. Kenya 1. Malawi 1. Pakistan 1. Philippines 1. Sierra Leone 1. S. Africa 3. Sri Lanka 1. Tanzania 1. Thailand 1. UK 1. Zimbabwe 1.

Course 20. Australia 2. Belgium 1. France 1. Guyana 2. India 2. Israel 1. Jordan 1. Kuwait 1. Lebanon 1. Malaysia 1. Netherlands 1. Nigeria 2. Norway 2. Portugal 1. Sierra Leone 1. S. Africa 3. Spain 1. Turkey 1. USA 1. Yugoslavia 2. Zimbabwe 1.

APPENDIX I (c)

Attendances by individual countries

Argentina	2	Liberia	1
Australia	15	Luxembourg	1
Austria	11	Malawi	2
Bangladesh	1	Malaysia	28
Belgium	3	Mauritius	1
Belize	1	Mexico	5
Botswana	5	Morocco	1
Bermuda	1	Netherlands	15
Brazil	12	New Zealand	5
Canada	9	Nigeria	40
Colombia	1	Norway	18
Czechoslovakia	4	Pakistan	11
Cyprus	1	Philippines	6
Denmark	15	Poland	3
East Jerusalem	2	Portugal	10
Egypt	4	Qatar	2
Ethiopia	1	Saudi Arabia	5
Fiji	1	Sierra Leone	4
Finland	6	Singapore	2
France	4	South Africa	26
W. Germany	10	Spain	6
Ghana	6	SriLanka	1
Greece	3	Swaziland	1
Guyana	3	Sweden	4
Hong Kong	1	Switzerland	1
India	13	Syria	1
Indonesia	2	Tanzania	2
Iran	4	Thailand	7
Iraq	1	Trinidad &Tobago	3
Israel	3	Tunisia	3
Italy	8	Turkey	7
Ivory Coast	1	Uganda	1
Jamaica	4	UK	2
Japan	3	USA	6
Jordan	10	Venezuela	4
Kenya	9	Yugoslavia	8
Kuwait	2	Zambia	2
Lebanon	3	Zimbabwe	3

APPENDIX I (d)

Most frequent attenders (10 +)

Australia	(15)	Mixed general and specialist courses. Mostly single participants.
Austria	(11)	Nearly all general courses - mostly groups, some singles.
Brazil	(12)	Slightly more specialist than general. Mostly singles - 2 large groups.
Denmark	(15)	Mostly general. 2s and 3s. Dropping off recently.
W. Germany	(10)	Mostly general. Some single. Some groups. Decreasing recently.
India	(13)	Mostly specialist. 1s and 2s.
Jordan	(10)	Mostly specialist. Nearly all singles.
Malaysia	(28)	Mostly specialist, though some general. Some singles, some groups. Groups include middle management.
Netherlands	(15)	Slightly more general than specialist. Mostly singles.
Nigeria	(40)	More specialist than general. Mostly groups.
Norway	(18)	More general than specialist. Mostly singles. Decreasing recently.
Portugal	(10)	Even general/specialist. Mostly singles.
S. Africa	(26)	Slightly more specialist than general. Singles/2s but 3s lately.

Comments: European countries who use courses use the general ones more than specialist. This use appears to be decreasing slightly in recent years. (Exception is Portugal) Africa, the Middle East and Asia (also Brazil) prefer specialist courses.

APPENDIX II

Overseas Development Agency: Book Presentation Programme - courses

Courses have been held in the following countries:

Fiji Dec 1982	*A general basic course, including story telling. Run in conjunction with the Canadian International Development Agency and the Australian Government. Variety of lecturers. Feedback: positive from the University of the South Pacific.*
Gambia Feb 1983	*Stated aim: to set librarianship in context, develop an understanding of co-operation and set professional goals. Recommendation: Future courses should contain a more practical content. Feedback: from participants: very positive.*
Guyana July 1983	*School Library oriented. Basic practices and curriculum development. Lecturers from Sheffield Polytechnic, and London College of Printing. Feedback: positive, epsecially to user education. More practical work wanted and another course as follow up.*
Kenya Nairobi April 1983	*School library oriented. Basic coverage including community profiling. Positive feedback, call for follow up course. Appreciative letter from Kenya Institute of Management.*
Mombassa August 1983	*Similar to Nairobi course*
Nepal	
(1st course) June 1982	*Probably the first in Nepal. Very welcome, it dealt with basic techniques and lead to request for further course.*
(2nd course) April 1983	*Follow up to first course. Emphasis placed on use of the library - relating the service to users needs. Feedback positive - participants favoured practical sessions.*
Peru Jan 1983	*Specific course on user education reflecting greater pre-course knowledge of participants. Feedback positive - particularly to participation.*
S. Africa 2 courses early 1983	*School library oriented. Very basic level.*
Seychelles Aug 1982	*General basic course. Follow up course requested.*
St Lucia early 1981	*Basic course.*
St Vincent March 1982	*Basic course*
Tanzania Jan 1983	*Very basic general course*
Yemen Dec 1983	*Very basic general course*

APPENDIX III

Short Courses 1973/84: a comparison of courses available in Britain
Subject areas

	1973	*1984*
General	*2 (3.7%)*	*5 (5.7%)*
Information/Reference	*12 (22.6%)*	*25 (28.7%)*
Computers/information technology/on-line services	*2 (3.7%)*	*27 (31%)*
Management	*6 (11.3%)*	*2 (2.3%)*
Services to specific groups	*2 (3.7%)*	*1 (1.2%)*
Services to children/ schools	*8 (15.1%)*	*2 (2.3%)*
Services in specific subject areas (law, music, etc)	*5 (9.4%)*	*6 (6.9%)*
Library design	*2 (3.8%)*	*0*
Archives	*0*	*3 (3.4%)*
Classification/abstracting	*3 (5.7%)*	*4 (4.6%)*
Marketing and display	*0*	*2 (2.3%)*
Centralised services	*1 (1.9%)*	*0*
Audio visual	*3 (5.7%)*	*2 (2.3%)*
Research methods	*4 (7.5%)*	*0*
Education for librarianship	*3 (5.7%)*	*5 (5.7%)*
Overseas information	*0*	*3 (3.4%)*
	53	*87*

Comments: Courses in 1984 are much more specific in subject coverage than in 1973.

The total number may or may not be significant: the listings for the two sample years were not compiled from the same sources and Library Association listings are known to be incomplete.

APPENDIX IV

Organisers of Courses

Organisers:	*1973*	*1984*
National bodies (LA, Aslib, IIS, etc)	*9 (17%)*	*43 (49.4%)*
Other bodies, commercial or otherwise, not connected directly with librarianship. (eg. Alan Armstrong Associates, NRC etc)	*1 (1.9%)*	*27 (31%)*
Academic institutions	*30 (56.6%)*	*7 (8%)*
Groups and branches of Aslib, LA, etc	*13 (24.5%)*	*10 (11.5%)*
	53	*87*

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Conference paper

CONTRIBUTION OF UNESCO IN THE EDUCATION AND TRAINING OF INFORMATION SPECIALISTS

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Abstract

Briefly indicates the character of Unesco's work in the library and information area and the nature of Unesco's General Information Programme. Describes major thrusts of the work in education and training of information specialists and users. Particular attention is given to activities of regional character or significance, notably regional postgraduate programmes in information science now operating or planned for southeast Asia, Latin America and Africa.

The possession and use of knowledge are essential factors for progress. Information, the communicable form of knowledge especially scientific and technological information, has therefore come to be recognized as one of the main prerequisites for economic and social development. It is an indispensable factor in the national use of natural resources, the development of human resources, scientific and technological advancement, progress in agriculture, industry and services, the blossoming of culture and the enhancement of social well-being. Consequently, accessibility to, and effective use of scientific and technical information is an essential pre-condition for progress in developing countries and a necessity for development efforts.

Simultaneously with the explosion of knowledge during this century there has been a spectacular increase in the production of printed matter throughout the world. This increase in the volume of information has created a need for efficient information storage and dissemination systems. During the last ten years, many countries have established or developed systems for storing and transferring specialized data within libraries, archives or documentation services for the use of researchers, engineers and decision-makers in the political, administrative and economic fields, and for other occupational and social groups that consume or repackage information.

In this context, the acute problem at present is the complexity and sheer volume of information, which will undoubtedly continue to increase. The processing and dissemination of information call for increasingly powerful and sophisticated technology to overcome the inadequacy of traditional information processes. Thus, computerized data bases have been set up, especially in industrialized countries, which provide almost instant access to a large proportion of current scientific and technological knowledge through data processing and telecommunication technology. It is noted, however, that our of over 900 bibliographic and numerical databases now available on-line internationally, less than one per cent are produced in developing countries. Access by all nations to the whole range of these data bases, which have become a vital source of information, would seem essential to the progress of individual societies and the general advancement of human knowledge.

UNESCO'S MEDIUM TERM PLAN

With the above considerations in view, Major Programme VII, "Information Systems and Access to knowledge" one of the fourteen major programme areas into which all of Unesco's efforts are to be directed during the second medium term plan period, 1984/89, has been devised to facilitate general access to information, to promote the free flow of information and to expand Member States' capacity to exchange, store and use the information needed for their development. Particular emphasis is laid on the development of the normative tools required for information processing, the application of new technologies, particularly computer technology, and on the strengthening of national, regional and international information systems and services and their interconnection within a single worldwide network.

This approach is intended to make a contribution to the establishment of a flexible and evolving world network based on compatible national, regional and international information systems and services, covering the entire range of knowledge and accessible to all Member States. Initially formulated at the Intergovernmental Conference UNISIST I, in 1971, and intended to apply particularly to science and technology, this objective was taken up again in 1979 at UNISIST II, which broadened the scope to include information resources in all subject fields.

Three specific programmes have been drawn up for work towards reaching this objective. The first programme provides for continuation of efforts made earlier to develop the technical and normative tools needed for the establishment of information services

and systems. The application of all these standards is a prerequisite for the development of compatible networks and for their effective interconnection. It is particularly vital if new informatics and telematics technologies are to be used for the processing of information. Observance of these standards by the various national, regional and international services and systems, and within the United Nations System, is a vital step in the process of creating a workable worldwide, multidisciplinary information network.

The second programme provides for the establishment or strengthening of library, archives, documentation, analysis and referral services and numerical and bibliographical databanks, as well as the organization of training programmes for information specialists and users. This dual approach is essential because it encourages the organization of national resources along efficient lines that can enable each country to make full use of locally available information and to take advantage of the resources of the various information services and systems available at regional and international levels.

The third programme is concerned with the collection, organization and presentation of information in Unesco's fields of activity and its dissemination in Member States and within the Secretariat.

MAIN THEMES OF UNESCO'S APPROACH

It is evident from what has preceded that Unesco's efforts are not directed solely to the development of institutions such as libraries, documentation centres and archives, which was, in fact, the traditional focus of sciences related to processing and retrieving information. The impact of the development of informatics is revolutionizing conventional libraries, archives and documentation centres and opening the way for the creation of new types of information systems. Computer science and related technology have already become essential tools for scientific and technological research, and they also represent a factor tending to transform and reorganize large areas of human activity: administrative data processing is altering the management of business firms and public bodies; the use of industrial robots is doing away with repetitive manual tasks while improving productivity and the reliability of industrial processes and enhancing product quality; office automation systems are transforming working conditions in the services sector, etc. Computer science is now, in many of Unesco's areas of activity, a most valuable tool whose uses already play a decisive role.

However, it should also be noted that, so far as activities under the General Information Programme of Unesco are concerned, data processing is merely a means or tool applied to only one of the many fields in which it can be used - the processing of specialized scientific, technological and socio-economic information. The objective is to promote the free flow of such information and to enhance the capacity of various societies to collect, store and use the information needed for their development.

The application of the data-processing tool by information and documentation services and systems gives rise to specific problems. The design and use of computerized information systems requires not only mastery of the computer techniques themselves, but also detailed knowledge of how libraries, documentation centres and other information services function, of the processes involved in the classification of documents, and of the documentarry services and products needed for the circulation of information to users.

Information services are confronted with the problem of the choice, acquisition, maintenance and operation of data-processing equipment, appropriate to their needs, and with the necessity of setting up adequate infrastructure and preparing staff to operate modern services.

The documentary procedures traditionally involved in information handling have to be adapted to the new tool of automatic data processing. They must also be standardized, inasmuch as data-processing tools must conform to the conditions necessary for the compatibility of information systems and services. Computerization provides a mean of establishing a variety of co-operating networking activities; in harness with telecommunications technology, it provides a means of on-line interrogation, via terminal, of databases. It is becoming increasingly important to apply the same rules everywhere for the cataloguing of records, using compatible indexing rules, vocabularies and thesauri, and complying with standard formats for recording bibliographic data on magnetic media with a view to exchange, so that any given system can read and add to its own files information originating in another.

One of the essential problems confronting libraries, documentation centres and information services in developing countries, and indeed similar institutions in the industrialized countries as well, is the choice of the right software. Available software does not in fact usually meet all the needs of information centres. It is extremely costly to buy or lease, it presents difficult maintenance problems, and, in most instances, takes no account of the standard documentary procedures that might ensure some degree of compatibility between systems and hence facilitate the exchange of information.

However, progress made in software development now permits producing portable software that can be used, with minor alterations on various computers offered by different manufacturers. In order to help developing countries establish their own documentary

databases, Unesco proposes, during the period of the Second Medium Term Plan, to contribute to the development of portable documentary software packages for microcomputers. It is expected that these software packages will be made available to developing countries free of charge and, so far as funds allow, assistance will also be provided for introduction of these systems and for training in their use.

In addition, Unesco intends to consider other problems arising from the increasingly wide-spread use of computers in documentation handling. Studies will, for instance, be conducted, in collaboration with other institutions, on the problems of information overload, on the obstacles to the adoption of modern technologies, and on the under-use of modern information systems. In view of the growing impact of electronic publishing, Unesco will also pay particular attention to this issue, with special reference to the general availability of information and documents, and the flow of data across frontiers. As the use of computer technology may enable institutions to share their resources, examination of the state of telecommunication networks in developing countries will be encouraged, in order to assess to what extent they may be able to accommodate the transmission of data.

GENERAL INFORMATION PROGRAMME (PGI)

The General Information Programme, to which repeated reference has been made, was established in 1976 to provide a focus for Unesco's activities in scientific and technological information, documentation, libraries and archives. It is the programme within which UNISIST activities are undertaken, UNISIST being the set of methods, rules, norms and standards needed for the creation of compatible information systems and services and their interconnection into a world science information system. PGI also aims at strengthening national capabilities for handling information through the development of national information systems.

An Intergovernmental Council of 30 members, elected by Unesco's General Conference, is responsible for guiding the conception and planning of the programme. Its administration is the responsibility of the Division of the General Information Programme whose Director reports to the Assistant Director-General for Studies and Programming.

The primary role of PGI is to act as a catalyst in promoting and coordinating action to improve the provision and use of information throughout the world. It performs this role through consultation and collaboration with a variety of organizations including other Unesco programmes, Member States, the United Nations and its agencies intergovernmental and non-governmental organizations and individual information specialists. PGI fulfils its role by promoting, sponsoring and supporting such activities as meetings and conferences; courses and seminars, pilot projects and consultancy missions; fellowships and equipment grants; research, studies and publications.

UNESCO'S ASSISTANCE FOR INFORMATION PERSONNEL DEVELOPMENT

For any serious developmental activity in the information field human resources are the most vital and precious inputs. It is people that produce, manipulate and utilize not only the vital human resource itself but also the material and knowledge resources. The availability of training information personnel in adequate numbers is prerequisite to the proper development, management and productive utilization of information systems and services.

The shortage of qualified and competent information personnel has been a matter of concern and urgency in many developing countries. On the one hand, rapid advances in the methods and technology of information handling have raised the possibility for these countries to take a leap forward. But, on the other hand, the inadequacy of their information manpower and information personnel development capacity handicaps their ability to grasp this opportunity.

Unesco has traditionally given a high priority to manpower development in all fields of its competence. To speak only of the information field over the past decade a high priority within Unesco's work has been attributed to information personnel development and a much-appreciated programme has been evolved and will continue to develop. An Ad-hoc Committee on Education and Training Policy and Programme meets every two years to advise the Secretariat on its policy, plans and strategy for the education and training of information scientists, librarians, archivists and users. Guiding principles of the programme have been to achieve a multiplier effort, to enable resource sharing and to increase the self-reliance and productivity of developing countries in information personnel development.

Unesco has long been urged to play a leading role in promoting the harmonization and coordination of education and training programmes in the field of librarianship, information science and archival studies. PGI, therefore, convened for example in 1979 a Meeting of Experts on the Harmonization of Archival Training Programmes, and in 1980 contributed to the organization by IFLA of a seminar in Manila on library education programmes in developing countries with special reference to Asia. It is planned to organize in October 1984 an International Symposium on Harmonization of Training Programmes in Information Science, Librarianship and Archival Studies.

PGI has been active for several years with promoting the collecting and disseminating of current information

on education and training programmes in the field of librarianship, information science and archives. The quarterly Newsletter on Education and Training Programmes for Information Personnel, issued since 1977 by FID under a Unesco contract, a periodic Register of Education and Training Programmes in Librarianship, Information Science and Archives and an International Clearinghouse on Education and Training Materials established in cooperation with FID and now maintained at Syracuse University, USA, also belong to this area of activity.

Assistance provided to Member States at their request from the regular budgetary resources of Unesco includes:

- Support to short courses, seminars and workshops on specific topics, at the international, regional and national level, intended to serve as continuing education programmes for library and information personnel and teachers of library and information science; some of the courses and seminars are specifically devoted to topics in the field of education and training of information personnel.
- Consultant missions to Member States to advise on specific aspects of education and training of information personnel (e.g. designing a training course or curriculum development).
- Support for the preparation, distribution and exchange of course materials and teaching aids, especially suitable for developing countries.
- Provision of fellowships for candidates from developing countries to attend short courses and seminars, for study tours, internships, and, occasionally, for study in a regular academic programme abroad.
- Preparation and dissemination of guidelines and manuals for developing library, information science or archives management courses.
- A similar range of assistance programmes for user sensitization and user orientation activities.

In parallel to the activities mentioned above, and using extrabudgetary funds, especially those from the United Nations Development Programme (UNDP), Unesco assists in or implements projects for the development of training programmes, schools or centres, established especially to meet the needs of developing countries.

A regional approach supplementing assistance to national programmes as a strategy for achieving productivity in information personnel development for developing countries, has been successfully implemented.

Reasons for a regional approach have included:

- the possibility for more productive use, through its sharing among several countries, of the limited international assistance available;
- the opportunity for stimulating self-reliance and mutual assistance among developing countries in a region;
- the heavy expense and uncertain relevance of academic training in Europe or America in relation to the urgent and rapidly growing need in developing countries;
- the failure of some persons trained on distant continents to return to their home countries, or their return for so short a time that the investment made in their education is not recovered.

POSTGRADUATE TRAINING COURSE FOR SCIENCE INFORMATION SPECIALISTS IN SOUTHEAST ASIA

One of our more successful efforts in this area has been a regional postgraduate training course for science information specialists for the Southeast Asian region. The Manila project "Post-graduate Training Course for Science Information Specialists in Southeast Asia" is an intercountry project of the United Nations Development Programme (UNDP). The Governments of Indonesia, Malaysia, Philippines, Singapore, Thailand and from 1981 additionally, the People's Republic of China, are signatories to the Project document. Unesco is the Executing Agency. The University of the Philippines, Institute of Library Science (UPILS) Diliman, Quezon City, is host to the training course and associated activities organized under the project. The National Science and Technology Authority (formerly the National Science Development Board) of the Philippines provided a good proportion of the counterpart funds from the start of the project in mid-1970. With the gradual integration of the course into the Masters degree programme of the UPILS, the University has assumed increasing responsibility for providing the counterpart funds and support.

The project document states the principal long-range objective of the project as: "to strengthen and expand the scientific and technical information systems and services of the countries in Southeast Asia to enable them to meet the information needs and requirements of the users in institutes for research and development, government agencies, industry and agriculture, and to cope with the development of regional and international information system..."

This statement of objective is derived from a collective impression of the recognition that scientific and technological information is essential for the advancement of science and technology and for their application to economic, cultural and social development and of the need for an information support network for Asia, voiced at the first Conference of Ministers Responsible for the Application of Science and Technology for Development (CASTASIA I), held in New Delhi, 1968. The related recommendation of the Conference was followed-up by project proposals to the UNDP by some of the Southeast Asian countries, as well as by

Unesco missions to the region in 1971 and 1972 to develop plans for a regional network, and presentation of these plans at regional seminars in Colombo (1974) and New Delhi (1976). The missions and study reports emphasized information personnel development as a prerequisite to network development.

By 1977, it became evident that the large investment needed for the development of the total regional information network for science and tehnology might not be forthcoming from UNDP or other sources. Therefore, at the UNISIST seminar in Bali (1977), action was precipitated to extract the information personnel development component of the network project and to establish a separate regional training project.

The general objective of the project was:

- To develop facilities for training in modern methods of information handling for personnel in the middle and higher level positions in libraries, documentation and information centres and systems;
- To contribute to and/or supplement the training of teachers in library and information science; and
- To contribute to the augmentation of facilities and aids for the teaching of library and information science.

It was hoped that the supporting activities would ensure in due course a multiplier effect and encourage self reliance in information personnel development in the developing countries of Southeast Asia.

The objectives of the project have been achieved through the implementation of three inter-related programme components, namely:

- training programmes comprising regular courses and continuing education activities,
- development of teaching aids and facilities,
- faculty development programme.

POSTGRADUATE TRAINING COURSE

The main component of the project, the PG course, was designed as a full-time nine-month (one academic year of two semesters) course. In the first three school years (1978-79, 1979-80, 1981-82) the course was conducted as an independent programme in the Institute of Library Science and led to the award of a Diploma of the University of the Philippines. Having established the curriculum, teaching methods, facilities and other infrastructure, subsequently, the Institute initiated progressive integration of the modules into the Masters degree course. This process has been completed for the 1983-84 session. The integration and award of the Masters degree on completion of the course was recommended by the participating countries.

Beginning with the academic year 1982-83, those selected for the PG course were permitted to register directly for the Master's degree and several candidates who completed the PG course were able to continue studies and complete requirements for the degree. For the 1984-85 session when direct UNDP assistance to the project will have terminated, the Institute will be offering a full Master's degree programme covering a wide range of subjects in library, documentation, information science and archives management fields.

The curriculum of the post-graduate course, developed over a period of years, covers a range of subjects which provides the participants with adequate knowledge and training in the theory and practice of tne design, development and operation of information systems and services. The course is intended to supplement rather than duplicate courses already available in the library schools of the region. Further, it was deemed necessary to familiarize course participants with:

- the need for and trends in information provision for development planning and management;
- a global and transnational perspective to stimulate cooperative and resource sharing arrangements in the information field and to encourage the search for optimal benefits from regional and international developments and programmes;
- the methods of problem solving and decision making, the use of appropriate techniques and tools of systems analysis, operations research, statistical analysis and other quantitative methods in information management; and
- the applications of information technology and the problems of information system design, development and operation.

Required courses of the PG course have included modules on information and society; information processing and handling; information services and systems; planning and management; information technology; communication; systems analysis and operations research; statistical methods and bibliometry; and research methodology. As an elective, students choose Information service-to Industry, or-for Agricultural Development, or-for Socio-Economic Development, or--for the Health Sciences.

The course modules were gradually absorbed into the Masters degree course requirements with minor changes to fit into the total set of subjects offered for a Masters degree programme at the Institute of Library Science, University of the Philippines.

Each year two or three short regional courses, seminars or workshops on specific topics have been organized in association with the Manila course to broaden its impact and further contribute to personnel development in the region. These have included a Regional Seminar on the application of standards in information, another on Bibliographic Control in South-East Asia, several on access to and dissemination of data in

science and technology and still another on developing audiovisual and computer-assisted instructional aids for library and information science courses. Late in 1983, a seminar was offered on the design and development of local data bases. These activities have been funded in large part from Unesco's Regular Budget. Handout materials, teaching aids and facilities developed for the regional seminars are subsequently used in the regular PG course. Some materials and aids developed for the PG course are used in the regional seminars. Invited resource persons are used for both activities.

The training of teachers of library/information science is a prerequisite to an effective information personnel development programme - if it is to produce a multiplier effect and self development capacity in the developing countries. The PG course, the Master's degree course, the short courses and seminars and special study arrangements are all available to teachers and prospective teachers of library and information science in the region.

Some of the participants in the PG course and Master's programme are already teaching or are soon to be involved in regular university courses or ad hoc short courses in library/information science in their respective countries. Some of the former graduates of the PG course are employed as teachers in the PG course and for on-the-job training of others in their own institutions.

DEVELOPMENT OF TEACHING AIDS AND FACILITIES

Class-rooms, laboratory and reprography facilities and secretarial help have been provided by the Institute of Library Science. Lectures, seminars, case studies, group work, project work, demonstrations, practice work, hands-on exercises, and other teaching techniques are used by the teachers and resource persons. A judicious blend of these options helps to minimize the barriers to communication and to the transfer of knowledge and skills resulting from the heterogeneous character of the participants. The teaching techniques are supported by various teaching aids.

These have included:

- course materials, manuals and other documentary handouts;
- audiovisual aids, such as transparencies, slides, tape-slide sets, cassette and open reel tapes, videotapes, films and film strips and the equipment necessary for using them;
- provision for use of computers and for practice of online access to remote databases;
- computer programs and software packages.

Teaching aids have been:

- acquired through purchase;
- obtained free of charge from local, foreign and international organizations and institutions;
- prepared or brought by teachers and resource persons of the courses and seminars;
- obtained on loan from other local institutions; and
- used at other local centres owning them where some of the courses have been conducted.

With the introduction of Media Technology as a module in the Master's degree programme of the UPILS, such facilities are expected to be further augmented and even more extensively used in the future.

The computer and online access facilities used in the course and seminars and the development of systems and software packages developed as part of the project work of the trainees and their use in the training in computer applications have been described at international meetings and in a paper prepared for the Unesco Journal of Information Science, Librarianship and Archives Administration. Experience in the teaching of information technology courses and the setting up of microcomputer facilities at the UPILS have significantly enhanced the Institute's capability to provide practice in computer applications in library and information services and to contribute to the transfer of information technology in the developing countries of the region.

The instructional aids are made available on loan for use at other centres in the Philippines. Copies of much documentary material are distributed to the participants in the PG course and the short courses and seminars. Interested institutions have obtained copies of some of the tape-slide presentations and audio-cassettes from the Institute either free of charge or by paying for the cost of materials only. Magnetic tape copies of source programs and documentation (over 300 pages) of a computer-assisted information storage and retrieval system with library applications (COMPAIS), developed by the participants in the PG course, have been provided to several institutions in the developing countries of Asia. A nominal charge is collected for the magnetic tape and cost of reproduction of the documentation, and postal charges.

REGIONAL PARTICIPATION IN THE PG COURSE

The number of participants admitted to each course, after the smaller first one in 1978-79 ranges between 25 and 30. This is a convenient size to provide adequate teacher-student contact and practical hands-on experience. By the end of the 1982-83 academic year, 129 participants or about 26 per year had successfully completed the postgraduate course. In addition to 10 each year from the Philippines, there have been students from Indonesia, Malaysia, Singapore and Thailand, the original signatories to the Unesco-UNDP project document, as well as from Bangladesh, Burma, People's Republic of China, Fiji, India, Nepal, Pakistan, Republic of Korea and Sri Lanka.

FELLOWSHIPS

In the first year, 1978-79, only five fellowships were available - two from the Commonwealth Fund for Technical Cooperation, one from the Lee Foundation of Singapore and two from Unesco. For the second course, 1979-80, UNDP provided 10 fellowships and Unesco 4 for participants from outside the Philippines. In the third year, 1980-81, to help meet the demand from other developing countries of Asia, UNDP provided 6 additional fellowships and this level of provision has been continued. Other UN agencies, such as FAO and UNIDO, and international development aid agencies, such as the International Development Research Center (IDRC) of Canada, have supported individual candidates to the course. Fellowships have also been made available from national UNDP-supported projects. Beginning with the academic year 1981-82, UNDP fellowships have been made available to 6-9 participants in the PG course to enable them to continue studies for one or more semesters to complete the requirements for the Masters degree of the University.

ADMISSION REQUIREMENTS

The minimum qualification for admission to the PG course has been a university degree. Candidates with an additional degree or experience in library/documentation or information work are given preference. Ability to communicate fairly well in English is essential as the medium of instruction and all studies are carried out in English. Some countries including Indonesia and Thailand administer English language tests to prospective applicants to the course. The People's Republic of China tries to ensure that its nominees have had an advanced English course and that the selected candidates from the non-English language countries are better able to communicate in written English than in the conversational mode. By the time they complete the 9-month programme, they are generally easily able to keep abreast through reading of the literature in the field. It is an objective of the Institute to ensure that inability to handle the English language 'perfectly' does not stand in the way of a participant's chance to obtain proficiency in library or information systems handling.

A HETEROGENOUS GROUP

While minimum qualifications for admission are prescribed and adhered to in the selection of candidates, nevertheless the participants in each course constitute a heterogeneous group - in terms of ability to communicate in English, prior library or information handling experience, subject of specialization, socio-political and cultural background, previous exposure to information technology, previous academic environment, etc. Such variety is a challenge to the training program, to the faculty in particular. But it also provides for exchange of ideas and experiences in meeting the different national information system development problems which leads to a better appreciation of alternative approaches to information handling in different environments, enrichment of academic life and motivation to contribute to, or advance the library and information area.

More than 50% of the Philippines participants and 38% of those from other countries have been sponsored by government agencies other than academic institutions. Substantial numbers have also been sponsored by national libraries and documentation centres and by academic institutions.

The academic qualifications and subject backgrounds of the participants are very varied. Several have had a Bachelor's degree or diploma in library science in addition to a university degree in another subject. About 52% of participants have had subject specialization in science and technology, while 38% and 10% respectively have had background in social sciences and in humanities.

In terms of level of highest University degree, the Bachelor's degree accounts for 76% and the Master's degree for 24% of the total.

FACULTY

Teachers and resource persons for the postgraduate course have been drawn from four sources:

- the regular faculty (5full time members) of the Institute of Library Science and the project coordinator, provided during the years 1978-82, have taught most of the modules;
- resource persons from other local institutions including other departments of the University of the Philippines, as for communication and systems analysis. Specialists in statistical methods and telecommunication were identified elsewhere;
- resource persons at centres where some course modules are taught, as for data processing;
- resource persons brought from abroad with UNDP or Unesco financing to teach special topics. A total of about two man-months of such services have been provided each year.

In addition to keeping up with developments in their subject areas through professional reading, faculty of the Institute have kept abreast by undertaking study visits to participate in specialized courses, to visit relevant systems, centres or services for internship experience and to participate in conferences and workshops. These visits were usually supported from project funds and Unesco sources. Two or three faculty members have been sent each year for a total of 2 to 8 months of study. Some teaching has been done by graduates of the postgraduate course. Faculty have also

benefitted by observing the teaching methods used by outside resource persons and by coteaching arrangements.

PROJECT MANAGEMENT

The Dean of the Institute of Library Science has served as the project administrator. A project coordinator was provided by UNDP from mid-1978 to the end of November 1982. The overall management and administration of the project are carried out on the basis of links established between the Institute and a wide variety of institutions and agencies at the international, regional, national and university levels. Some of these linkages are of administrative character, some support the project's contacts in the region, some provide financial support, resource persons or access to facilities required for the project. Examples of the contacts maintained at the international level in addition to Unesco and UNDP are library and information science schools in other countries and organizations like the British Council. At the regional level, contacts are maintained with Unesco National Commissions in countries of the region, and with institutions like the Asian Institute of Technology, Bangkok and the Agricultural Information Bank for Asia, SEARCA, at Los Banos.

FEEDBACK AND MONITORING MECHANISMS

Procedures for executing UNDP regional projects call for the preparation of progress reports every six months indicating the implementation status of the various project components, the problems encountered, proposed activities, etc.

A Coordinating Committee consisting of representatives of the six countries signatory to the project document, Unesco and UNDP has met periodically to review progress made in project implementation, to consider the problems encountered and further needs, as well as to provide feedback on the impact of the programme in the countries of the region. Committee members have been provided in advance with a progress report about the project. A tripartite review of the project was arranged for UNDP, UNESCO and the Philippines authorities on several occasions.

There is an almost continuous feedback from the participants in the course in the classroom and in individual contacts with faculty members concerning the content and difficult aspects of specific topics, the curriculum and teaching methodology. Feedback from graduates of the postgradute course is received from time to time in correspondence with the Institute. The employers and Coordinating Committee members also write to the Institute on academic and other aspects of the course.

In 1979, six months after the completion of the first course (1978-79), the Institute made a questionnaire survey of the first group of graduates. The 100% return provided useful information on how the graduates were being used in their respective institutions and on the course curriculum. In 1981, under project sponsorship the Dean of the Institute visited four of the collaborating countries, and met with former graduates and their employers to assess the impact of the course and foster cooperation between the Institute and those concerned with information manpower development in those countries.

The reactions from nearly all of the graduates of the successive courses, from the participants in the short courses, seminars and workshops, the employing agencies and institutions, the Coordinating Committee members, and the resource persons, have generally been positive and encouraging. There has been a growing interest in the project not only in the countries of the regions but in other regions of the world.

The feedback obtained through these different channels has helped to modify the content and the curriculum to make them more responsive to the needs of the developing countries of Southeast Asia. Inadequacies in physical facilities and course arrangements pointed out in the early years of the project have been gradually remedied.

In preparing for this presentation I considered that it might be more useful to describe one type of Unesco education and training activity in very considerable detail rather than to give, as we often do in forums of this kind, a more superficial general view of all our work. In continuation of this tactic, we shall now examine much more briefly, because the projects are in earlier stages of planning or development, the efforts being made by Unesco in two other regions to assist the establishment at the post-graduate level, of regional training facilities for information specialists.

LATIN AMERICAN REGIONAL PROGRAMME OF POSTGRADUATE STUDIES IN INFORMATION SCIENCE

We will now turn our attention to a project intended to develop and establish a programme for the education and training of information personnel needed in the middle and higher level positions in library, documentation and information centres, systems and networks as well as in the library and information service training centres of the Latin American region.

In Latin America several recent regional intergovernmental conferences in the fields of economic development, science and technology development, education and cultural development, and conferences and seminars on the development of library and information networks in the region have not only recognized the importance of information support services in all sectors of government and society for the countries of the region, but have also identified library and information personnel development as a crucial factor in the devel-

opment and operation of effective information services. Professional organizations have also stressed the need for an urgent programme for information personnel development. However, insufficient provision has as yet been made in the Latin American region except, perhaps, in one or two countries, for the education of information personnel at the higher level - graduate and postgraduate in academic institutions. Therefore, persons have to be sent to universities abroad for such education and training. On the scale required this is expensive and further, it does not facilitate the development of local capacity for providing personnel requirements, nor is it conducive to inter-country cooperation and resource sharing.

Venezuela, having officially recognized information services as an essential component of national development through its national planning agency CORDIPLAN and the development of a national information system, SINASBI, the Instituto Autonomo Biblioteca Nacional y Servicios de Biblioteca de Venezuela (IABN), a component of SINASBI, took the initiative to formulate a programme for information personnel development. Among the governments of the region, Costa Rica, Ecuador, Nicaragua, Panama and the Dominican Republic indicated their official interest at an early stage for a project proposal submitted to UNDP by Venezuela.

Based on a report prepared by a Unesco consultant, earlier proposals and studies, the experience gained by Unesco in the regional project for Southeast Asia and discussion between representatives of IABN, Simon Bolivar University, and other Venezuelan institutions, detailed project proposals have been prepared and submitted to UNDP. In the meantime, approval has been received from UNDP to undertake pre-project activities during 1984. In the execution of these, which are oriented to areas like curriculum development and staff development, the funds allotted by UNDP are being augmented by contributions from the British Council and from Unesco's Regular Budget.

Particular interest has been stirred in the region by plans to convene a seminar on curriculum development to be held in Caracas from 18 to 29 June.

The seminar will, under the direction of Professor Saunders, provide a forum for the exchange of ideas of some 15 specialists concerned with postgraduate studies in Latin America with a number of specialists from other parts of the world. The specific purposes are:

- to identify a core curriculum for the postgraduate programme,
- to outline the curriculum in more detail in four areas which are relatively new and of growing importance in the training of information personnel, but where no clear consensus exists with regards to scope, contents, teaching methodology or teaching materials. These subject areas are user studies and information marketing, quantitative methods, management and information technology,
- as a further task the seminar will examine the possibility and mechanisms for harmonizing the different post-graduate programmes in information science planned or already operational in the region.

AFRICAN REGIONAL PROGRAMMES OF POST-GRADUATE STUDIES IN INFORMATION SCIENCE

The need for English language post-graduate training in information science in Africa has been regularly cited for some years. While African countries using English as the language for higher education maintain a number of excellent schools of library science and high level programmes in computer science, there is at present no fully-developed academic programme in information science.

In view of the growing awareness in African countries of the important contribution that modern information services can make to their development efforts it is clear that the perpetuation of study abroad in this area can not provide a fully satisfactory solution to all current training needs. The adaptation of information systems and techniques for Africa is vital. It is also important that facilities should be available for the training of a solid core of professional leaders capable of identifying particular information needs as well as the existing information resources of Africa.

In order to determine the interest of the African university community in the creation of such a programme, the Association of Commonwealth Universities (ACU), at the suggestion of IDRC, explored the matter at the meeting of Commonwealth Heads of Universities held in Hong Kong in March 1981. The response was very favourable and a number of African universities subsequently indicated interest in supporting such an undertaking.

Shortly thereafter the Information Sciences Division of IDRC and the Division of the General Information Programme of Unesco discussed how the establishment of a regional programme might be furthered. As a first step it was decided to send, during February 1983, a joint mission to eight African universities in six countries (Ethiopia, Ghana, Kenya, Nigeria, Zambia and Zimbabwe). The mission's task was to ascertain the views of the institutions and other appropriate bodies and individuals on needs in the field of information science, gather information on the types of programme required to meet those needs, assess the capacity of the institutions to undertake such a programme, and, finally, to make recommendations to IDRC and Unesco for the location of a programme.

The four man mission, of which I was a member, submitted its findings to IDRC and Unesco in April 1983. The mission was informed everywhere it went about the urgent need for information scientists and the present inadequacy of facilities for training such specialists in Africa. The absence of a sufficient number of properly trained information specialists was consistently viewed as the primary stumbling block in the development of effective information programmes. At the decision-making levels in all the universities visited, the need for a strong information infrastructure was deemed essential for the improvement of social and economic development at national and regional levels within Africa. The mission was assured at every institution it visited that a postgraduate training programme of the kind envisaged, wherever established, would receive fullest support.

The mission recommended, first, that there should be two programmes, one for West Africa and the second for Eastern and Southern Africa; and, second, that the programme for West Africa should be located at the University of Ibadan, Nigeria and that for Eastern and Southern Africa at the University of Addis Ababa, Ethiopia.

The bases for these decisions were the amount and quality of work already in progress in information science and related disciplines in the institutions concerned, the general availability of facilities for practical training in the locality, general accessibility in relation to the rest of the region and, finally, the degree to which the local environment was felt to be capable of stimulating work and research in information science.

At the University of Ibadan plans for launching an information science programme are far-advanced, and much infrastructure is already in place. During discussions held in Paris in January 1984 a programme of preproject activities for the coming months to be financed by IDRC, Unesco and the University was drawn up. Particular stress is placed in these on staff development and on curriculum development.

Discussions conducted by Unesco and IDRC in Addis Ababa during January and February 1984 with a "task-force" set up by the University of Addis Ababa also resulted in the preparation of a list of preproject activities for financing by IDRC and Unesco. These activities are expected to contribute to the formulation of detailed proposals for a project and to the training of permanent teaching staff for a regional programme in information science.

The importance of establishing close links between the two African programmes and between these and the Latin American and Southeast Asian programmes has been stressed. Arrangements have already been made for some of the first of these contacts.

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USER OF INFORMATION EDUCATION THROUGH SCHOOL LIBRARIES

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Abstract

In today's technically oriented world, a high level of adaptability to new ideas and techniques is required of everybody, the term "user of information" can no longer apply only to the post-high school educated but to all members of society. The problem of user of information education has to be tackled long before the user of information becomes a scientist or engineer. The child has to be initiated in the art of intelligent and conscious use of library material from an early age. If this practice were generally adopted in schools on every level, faculties and universities would receive a much higher level of student. Therefore it is most important to integrate school libraries into the educational mainstream. There must be a co-ordinated programme of user of information education from kindergarten through elementary and secondary school libraries and then on to higher education and on to life-long learning. It seems equally important that library education for librarians incorporate a user of information course or component in the curriculum and that the component should be a compilation of the practical design and delivery of instruction as well as the theoretical basis for reference work.

In today's technically oriented world, a high level of adaptability to new ideas and techniques is required of everybody, the term "user of information" extends to all the members of society. The bulk of printed matter being produced today causes considerable problems for users of information because the potential user is not educated and not prepared to receive and assimilate the services of information workers.

A striking quantity of literature in the last decade has been written on the subject of the user of information education. A recent bibliography of library user education /1/ lists almost a thousand English-language items alone, nearly all written since 1970: general surveys of the state of user education, descriptions of particular programmes, the use of audio-visual media, etc.

Today the educational authorities of most countries do not develop the ability of intelligent reading from an early age and do not emphasize the use of library media as a primary source of knowledge. The educational authorities very seldom have a plan - developmental and operational, designed and structured - to achieve fullest realization of a school library service and instructional process. The school library programme should be a developmental and operational plan wherein the school library functions as a learning laboratory where the use of all media, print and nonprint is purposeful, planned and coordinated with an educational programme and instructional processes. Such a philosophy allows for the design and development of a school library skills programme that is planned and sequential, that enables pupils to meet their educational and personal information needs, and that prepares them to become life-long library users /2/.

User of information education includes the learning of traditional reference skills, such as the use of the encyclopedias and indexes, as well as those newer skills related to audiovisual and computer technologies. These skills are not taught in isolation from the curriculum, which means that the design of a user of information education programme requires, first, an identification of the skills that need to be taught and then an analysis of these in terms of their relationship to the curriculum and to a grade level.

In truth, school library development has not attracted enough attention of educational authorities. Why is there this neglect? The answer lies probably in meagre financial resources and the greater demand for education. An unawareness of the role of a school library service on the part of authorities may be listed as another factor for the neglect of creating school libraries. Also, the existing educational system, which is basically textbook oriented, does not encourage the development of this type of library. In view of this one cannot be optimistic for the development of school libraries in any country. This is because of the absence in the teaching programme of a real concept of school

library. There is a need to convince the authorities of the role of the school library, of the influence it can exert on the individual pupil and of the contribution it can make to the entire educational programme at all school levels.

The problem of user of information education through school libraries has to be tackled long before the user of information becomes a scientist or engineer. The child has to be initiated in the art of intelligent, discriminating and conscious use of library material from a tender age. This alone can raise the standard of general education, stimulate intellectual curiosity and train pupils at an early age in self-reliante and independent thinking. If this practice were to be generally adopted, universities would receive a much higher calibre of student: one who has already acquired the habit of using library media as a tool for study and intellectual advancement.

User of information education should stress that the skill be relevant to the needs of the pupil' that the pupil be motivated to acquire and develop the skill, that the pupil be supervised in his intial attempts to apply the skill; that the pupil be given repeated opportunities to apply the skill based upon his performance; that the pupil be given individual assistance based upon testing and follow-up activities; that skill instruction be provided at increasing levels of complexity and that skills be applied through various learning situations so that a transfer of learning can take place and that skills be developed concurrently /3/.

There should be co-ordination, co-operation and communication in library user education. The goal of a co-ordinated programme of user of information from kindergarten through elementary and sedondary school and then on to life-long learning or higher education can only be met if there is agreement on the content of a user education programme at each stage.

A young pupil should be familiar with a book - its constituent parts and the sort of information to be gleaned from each (author, title, editor, place and year of publication, forword, contents, bibliography, index): kinds of books - fiction, textbooks, monographs etc.: use of standard reference books - dictionaries, encyclopedias, maps, atlases, use of library catalogues.

An older pupil should be acquainted with other kinds of library material such as newspapers - their various sections (editorial, political, economic, cultural) - periodicals and serials, bibliographies and the principles of book classification. A student at a higher level of education should be familiar with government publications, non-book material - reports, dissertations, films, microforms, records, audiovisual aids etc. - secondary publications and all sorts of libraries: the national library, university libraries and important special libraries in the country, as well as national and international organizations concerned with information work.

When user of information education is introduced in elementary and secondary schools, the universities will receive articulate students used to independent work and thinking. They will be able to concentrate on the more sophisticated areas of student intellectual development and deal in greater depth with the subject fields of his choice. Today, precious time is wasted at the institutes of higher learning in the imparting of knowledge and habits which the students should already possess when entering university.

The user of information education of university students should strive to increase, first of all, their information standard. The information standard of these students corresponds to their knowledge of, and ability to acquire, accept, understand, transform and dissiminate, information to which they have a potential access and which they should use in their studies.

Thus, they should be familiar with the institutions where the necessary information sources can be found and should know from what information sources the relevant information can be drawn and how it can be put to practical use. Furthermore, they should know how to produce new information and understand the way in which it is disseminated to further users. Last but not least, they should be acquainted with the general tasks of information work to help them recognize the importance of their co-operation with information workers.

Programmes of user of information education as continued at the university level can then concentrate on sources of information in specific subjects and the more sophisticated techniques and methods of gathering and assimilating information. Students should be acquainted with methods of acquisition of needed information: catalogues, files, reference books, journals, bibliographies (their characteristics, object and use) as well as other means which help the users of information to find relevant information such as the mechanization and automation of information work: the main features of mechanization and automation of information work and its output applied by the users of information.

If user of information is to progress toward an agreement, the content of instruction must become the topic of continuing education programmes and workshops in the near future. It seems equally important that librarians' education incorporate a user information education component or course into the curriculum and that the component be a combination of the practical design and delivery of instruction as well as the theoretical basis for reference work. Workshops, research and mini-courses on the theoretical aspects of u r of information education would all contribute

towards encouraging an investigation of the principles of information sought by the profession at large. The education of the user of information is not yet complete. Challenges are there. It remains to be seen who will provide the forums for the new approaches.

There has to be an institutional interest in teaching methods and curriculum development. Recent developments in librarians' education in Croatia has allowed for fresh approaches to teaching and learning. There has beer some movement away from orthodox lecturing; the time the pupils spend in the library and the heightened use of library resources, therefore, will follow naturally in the wake of these changes. Although there will be less than total realization of the impact on the library of such developments, pupils will nevertheless begin to make greater use of its resources, and in better ordered libraries and institutions this will lead to an interest in how the pupil might be helped in his understanding of libraries and their contents. Project work becomes particularly meaningful when the pupil has receives direct help with the task to tracing information and finding a way through the confusing mass of literature. Such assistance is best provided by both the subject teacher and the librarian, each contributing a different kind of knowledge and expertise. The groundwork for such co-operation must be established over the long term. As previously noted, the user of information education programme is a cooperative effort of the school community. The skills that relate to information use need to be incorporated into the syllabus at each level. It is not enough for the school librarian to identify the skills and to relate them to the curriculum. Teachers need to understand the importance of information skills and their relationship to the curriculum. The teacher and the school librarian must plan together to make pupils competent in their search for information and in their use of it.

With this in mind, school librarians must show interest in school planning and the broader function of the parent institution. The aim must be to achieve proper coordination of the school library with the whole teaching/learning activity. The process begins with the school librarian's participation in and support for the wider school planning of the institution, the main aim of which begins at the course planning stage where the advent of new courses, subjects and options is matched by appropriate stock development and the planning of its future exploitation. The school librarian must respond to new subjects and new methods of teaching. An obvious example should be an increase in self-selected, self-paced project work which will bring with it a doubling in the need to have a much wider range of bookstock. It will also necessitate that the pupils, faced with their first study of reasonable depth, have some basic guidance in literature searching, information collecting and in the presentation of bibliographical detail. There is little doubt that most work remains to be done in convincing the teaching staff of the importance of the library in relation to the development of new courses and the fullest coordination of the school library with school authorities.

This view should be fortified by suggesting that, in order to fulfil its educational role, the school library must be fully drawn into the life of the school. Some would go further and argue that changes in approaches to teaching have made the school library the natural centre of the learning process for many pupils. The learning function has extended into the school library which can be organized and exploited in such way as to encourage intellectual curiosity and independent learning as well as extend the pupil's knowledge beyond the limits of a formal curriculum. It is true, that much teaching today is planned in such a way as to stimulate thought and open up individual lines of enquiry which extend naturally into the school library. The chances of this happening are increased in a situation where the teacher and the school librarian each acknowledge the skills of the other and jointly plan courses into which school library use and user of information education is sensibly inserted. The juxtaposition of the knowledge and skills of the teacher and the school librarian together are needed to achieve wider schooling objectives.

If we focus attention on the school librarian alone for a moment, it must be admitted that the school librarian involved in user of information education must possess certain qualities and skills and must have the benefit of adequate support services if he is to operate successfully. He must receive active encouragement to teach and must feel assured that there is a supporting framework of technical and other assistance. In addition, he must see his teaching as an activity closely associated with his work on book selection, stock editing and general exploitation of library resources. It is crucially important to recognize that classroom activity, though important, cannot stand alone. The pupil should be given the opportunity of help from the school librarian either in the classroom or in the school library itself. Indeed, the group activity in the classroom is as useful for establishing contact between school librarian and the user of information as for transmitting knowledge and information. It may be that most effective "instruction" is carried out on a one-to-one basis in the school library itself, but this tutorial situation is often brought about as a result of contact established in the classroom situation. The pupil's exposure to teaching, advisory services and the full range of printed and audio-visual aids over the full span of his period in school should be seen as an extended learning experience. This is something recognised as competence in library use as a complex of knowledge, skills and attitudes which must be devel-

oped over a period of time through varied and repeated experience in the use of library resources. The value of this experience is strengthened when continuity is provided by a well qualified school librarian immersed in the literature of his school library and trained in the basic skills of teaching.

The basic requirements are for a well equipped teaching space, technical back-up, and a range of teaching aids which may be locally produced or externally purchased. As circumstances permit, it is also important to provide the school librarians with instruction in teaching skills and to arrange for regular opportunities for exchange of experience seminars and practical workshops.

Co-operation between the school librarian and teaching staff is essential to the success of user of information education. The teacher's role is important for a number of reasons. It is essential that the teacher communicates to the school librarian the broad nature and content of his teaching and that there is full co-operation on book selection and stock editing. The teacher's reading lists should be accurately presented, related to actual stock available, regularly up-dated and made freely available to the school library in advance of pupil use. The teacher should incorporate into his teaching references the appropriate literature and should stress its importance to the pupil. He should support the idea of user of information education, should help the school librarian plan the content of courses and help him with the timetabling. The school librarian and teacher together should take considerable trouble over preparation for pupil's project work. This level of co-operation from any one teacher is a lot to ask because few teachers would claim to have the level of understanding of library services which would enable them to exercise the necessary influence. While their knowledge of a subject and its literature is frequently impressive, the additional skills of literature searching and ordering as well as systematic approach to the use of libraries may well best be transmitted by the school librarian.

A carefully packaged and carefully thought-out course must be given to what each level of pupil needs in the way of help and education. The school librarian must be sensitive to the requirements of each level and plan his teaching accordingly. Above all, he must remember that he is not transmitting a knowledge of librarianship as such, but assisting others in making good use of resources having direct value to their studies.

A perfect opportunity to co-ordinate lessons on how to find and use information, and most importantly to impart the concept of how information is organized, is to use computer-based information management. There are thousands of computer-assisted-instruction applications in the USA, in almost every conceivable discipline and at every educational level from elementary to postgraduate. Computer-based information is to make all computer-based systems, both those in use and those to be designed, hospitable to the general, untrained user. He can familiarize himself with the necessary techniques, through instruction, of how to use the system, how to find information, and how to interpret and apply information available from the system itself. Through terminals located in school libraries, users can verify holdings, call numbers and issue status for serials and periodicals, check the status of circulation books, see what books are on order and consult maps of stack areas where books are located. Such systems are self-guiding, requiring no prior instruction or direction. This is one of the few systems that allows user-access to computer-based bibliographic and management information.

Users, in the context of trying to find a book or a journal, will have direct access to information that explains, interprets and expands the strategies necessary to access and use of information. The end product should be not only that the initial request is satisfied but that the user gets a firm grasp of the principles underlying information organization. This will be of considerable intellectual benefit beyond the parameters of the original request. Teachers and school librarians who are in charge of curriculum development should be interviewed to establish the study of library skills that should be taught/learnt, to indicate alternative methods for dealing with them and to provide a pattern for development over the school periods when programmes of user of information education could be introduced. Obviously, the school librarian would still have a role in developing usable computerised information retrieval systems in co-operation with computing and teaching staff, but the most important role would probably still be within the school library, developing personal relationships with the users and acting as facilitator and educator.

To summarize what is possible to achieve in the field of user of information education, it has to be said that the climate within a school and the quality of library staff are crucially important. Library management must provide adequate resources and help create a receptive climate within the institution. Good training and technical support are needed if school librarians are to operate successfully. There must also be the fullest co-operation with teaching staff. All teaching activity within the school library must relate closely to the real needs of pupils. Teaching programmes should be well timed and thoroughly organized. For all this, the establishment of model school libraries at various levels, under supervision of professionally qualified staff, is suggested.

Competency in library use is a small but important part of a pupil's education. He should be given the skills and confidence to use bibliographical tools,

library resources and be able to search effectively for the information he needs. He must feel at home in a library and become a life-long library user.

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Conference paper

THE ROLE OF INFORMATION SCIENCE EDUCATION FOR SOCIAL SCIENTISTS AND THE DEVELOPMENT OF INFORMATION ACTIVITIES

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Abstract

Several authors (e.g. The Club of Rome in Microelectronics and Society - For Better or for Worse) draw attention to the dangers hidden in the development of information activities based on computerization, especially to the processes of centralization and hierarchization of societies as the "cost" of rationalization and effectiveness of management. However, as Habermas pointed out, an ambivalent - authoritarian and emancipatory - potential is concealed in information activities. The question is how the latter can supress the former. It can be done, essentially, not by new technological solutions but rather by the development of a critical individual and social consciousness and planning according to social needs. History abounds with proof denying technological determinisms, fatalisms, and utopiae, confirming instead their concrete social rootedness. In order to prevent an inhumane development of informatics and to rationalize social relations which become more and more complex in self-management because of the growing number of subjects participating in the process of decision-making, the role of an information science education for social scientists becomes as important as that for natural and technical scientists, or perhaps even more so. This contribution suggests a curricular model for information science education in undergraduate studies of sociology, political science, and journalism. The aim is to provide students with a technical (instrumental) knowledge (i.e. in mathematics, statistics, programming, etc.) as well as with an awarenes of the social implications of "informatization", its development as part of the evolution of science and technology, and its dependence on the power and productive structures of society, on its culture, and on the social functions of these processes.

Although information theory holds that the quantity of information decreases the state of disorder, this general, non-historical measure of (dis)order does not apply to the "measurement" of rational order in social relations. It would be difficult to find a generally accepted definition of information from among those available as all are required by diverse disciplinary frameworks and theoretical approaches. Hence the relative velidity of definition. In our discussion let it suffice to claim that information is the basis of that human activity which we designate as management, direction, supervision, organization, and which is hence also the basis of self-management and social planning. Various past and present societies have "rationally" ordered (production) relations in regard to different criteria of rationality. The intervention of social forces did not increase order in general; rather, it increased order with regard to the main purposes and goals of institutionalizing social relations.*

*I owe thanks to Zdravko Mlinar and Cveto Trampuž for the exchange of ideas while writing this paper.

The concept that information is the basis of rational ordering in human relations includes the division of labour into supervision or direction, and its pre-supposition: agreement or accordance. The very activity of supervision or direction has, as Marx revealed, a double significance /1/. It belongs, as general work, *to all societies in as much as it is a condition or result of socially combined production processes, in as much as it is required by the very nature of work (as in directing an orchestra), as the result of "known necessity". On the other hand, supervision and direction exist as* special work *when there is opposition between direct producers and the owners of production means; the greater the degree of opposition, the greater is the role of supervisional work. The activity of direction and supervision, conducted by the government in all class societies, embraces both these aspects: it embraces both the carrying out of collective affairs which derive from the nature of every collectivity, and also the conducting of specific functions which stem from the opposition between government and the masses.*

Direction and supervision are, by necessity, based on different forms of appropriating information. With an ever more diversified division of labour, and ever more developed production relations, Man's world becomes objectively and subjectively so complex (which is naturally only a quantitative specification) that in order to control it he continuously requires more information. Yet Man's "information capacity" is subjectively and objectively limited. Its historical and social rather than its physiological (general) determination should be emphasized. In the former sense, "information capacity" can increase by reduction of the working day and the liberation of labour, by education, by developing Man's needs, interests etc.

The appropriation of information (either as direct cognition, i.e. the production of information, or as the "use" of produced messages) is a condition for supervision and direction. On the other hand, the mode of distributing information determines the mode (class character) of the rational ordering of social relations - it is determined by the interests of the ruling class. The general goal of individual acquisition of information is, in principle, always the same; however, in all class societies it is from the point of view of the real (generally material) producers, directly in opposition to the goal that guides information distribution (this is always in the hands of the privileged members of the ruling class). The interest of one domain (one class) is therefore the negation of the interest of the other domain.

Historically seen, the relationship between individual acquisition of information and social distribution of information develops in the following stages:

1. In pre-capitalist societies the ordering of social relations is based on a mode of information distribution which, within the receptional domain of "use of messages", creates an impression of chaos, excessive complexity of the environment, disorder, unpredictability and uncertainty and thus also of apathy and fatalism, though in time the extent of the value of information and its use increases - with the development of science etc. Such a system is open to physical coercion in the spheres of material and mental production. Creative information activity is limited by different forms of censorship. This stage terminates with the struggle for "the rights and liberties of Man and the citizen", i.e. with the development of a (bourgeois) democracy.
2. The bourgeois revolution affirmed a system of confidence which was still based on exclusiveness of the domain of information distribution (and, thus, exclusiveness of direction, decision making and supervision) but also on legal codes and state institutions which decreased the degree of uncertainty. The dominant subordination to "higher", "general" or "national" interests (i.e. to the interests of the ruling bourgeois class) limited Man's practical activity but did not render it impossible. In as much as a citizen "believes" in the decision of government and subjects himself to it, he has the practical possibility of affirming his separate interests, of satisfying his individual needs. This concept is included both in the specification of "classical" human rights and liberties and in the idea of capitalism as a possibility open to all. Harmonizing consciousness with alienated social relations is now no longer accomplished by reducing information (censorship), but rather by "mechanisms of confidence" - direct coercion is replaced by manipulation. By increasing the extent of information activity of all types, the amount of information and number of messages produced becomes an ideological measure of the degree of democracy in social relations (as Enzenberger states: "a speedometer of social development"). The essential fact remains hidden in this - i.e. that the "information revolution" is not at the same time a social revolution but only a necessary condition for the development of radical needs that can be satisfied only by revolutionizing social relations.
3. Only in a class-less society, i.e. after the elimination of the opposition existing between particular needs that direct the social distribution of information and the needs of (individual) information acquisition, shall people be able to consciously order their relations with nature and between themselves and not just believe in them as a force outside of, and above, themselves. The result of information activity shall then no longer be a mystification of social relations that require confidence within the domain of acquisition, but rather, the unmasking of their mystified "eternal" nature. When Man no longer lives at the mercy of someone else - as Marx noted -, will human consciousness no longer include the impression that the existence of nature and of Man by itself is not comprehendable because it is in contradiction with all the tangibilities of practical life. To achieve this, among other things, a most complete knowledge is needed so that people can consciously participate in social management.

It would be naive to claim that such conditions have already been fulfilled in any society. Yet it is not too exaggerated to state that the development of information activity and microelectronics has, for the first time in history, opened a true possibility to realise Marx's vision of the total Man. The rapid development of information technology (world production has increased 10% annually, the capabilities of computers have increased a thousand times over the past decade), by producing machines that on the basis of processing information can carry out ever more complicated and precise tasks for and instead of Man, makes possible the exceptional development of information science and information activity. The first term denotes all

fields that pertain to the design, construction, use and maintenance of systems for processing information, including instruments and computer programme equipment, and (also) social and organizational aspects and their influence on other activities. By information activity we denote all human activities in which information acts as a means, object, goal or result.

Predictions from the turn of the century have been fulfilled today: information science has become the driving force of technological, economic and social growth. In the USA, according to Porat /2/, by the mid-fifties relatively, and by the mid-sixties absolutely, over half of the labour force was already employed in information activity. In that period the primary information sector (production of information means, machines and information) realized already 30% of the national income. At the same time the secondary information sector was also developed - productive use of information in the processes of directing, decision-making, management, control etc. Analyses of the OECD indicate that other developed western states followed this trend: in the countries of the OECD the information sector became the most significant sector of employment by the mid-sixties. Today the primary and secondary information sectors contribute 30% to 50% to newly created value /3/.

The effects of the development of information activity are decisive in numerous fields: from natural resources and energy-saving increasing productivity to an alteration of individual needs; from decreasing routine work to re-structuring the economy and employment; from medicine, education and leisure to administration and management. Decades have already passed since information activity was only a technical and technological problem. By entering all the pores of society, information activity "in itself" has become, regardless of whether or not we perceive this fact, the key field for revolutionizing the mode of production and thereby production relations. However, in as much as this force is liberating, it can also become a hinderance, even a destructive force. Just as it can, without doubt, contribute to the fuller development of Man and societies, it can also (and in fact actually does) deepen Man's alienation and subordination.

Information activity is not only an infrastructure, i.e. the basis for the development of each and every activity. Rather, it is a bridge between the social, technical and natural sciences and activities. In the development of information science a linkage is made between the management of things (with things) and the management of people (by people, including self-management). Within specific (social and natural) sciences, the affirmation of information science enables the development of more efficient methods of research, the development of research means. The application of this knowledge in production and social practice signifies the extention of the instrumental aspect (function) of information science.

Information activity, at the same time, develops a specific field of research in which social and natural sciences creatively meet. From the viewpoint of social science, the essential problems regard the investment of information activity in social relations, the examination and design of implications and developmental alternatives (i.e. the creation of information systems in society). From the viewpoint of social science the central concern is in finding answers to two basic complexes of questions: 1. What real possibilities are created by information science for the development of social relations in the direction of defined developmental goals?; 2. What are the effects of development of information activity in diverse sectors of social relations? Here the question does not simply address itself to the application of previously formed knowledge in information science, but rather concerns its critical analysis and further development from the standpoint of known social needs.

If we confuse the two levels (1. management of things, instrumentality, application; 2. management of people, communication, creativity), we accept that in the final instance the management of people is reduced to the management of things, to the technical questions of information science, to a technical specification of the purpose of information science. The fact remains that the development of information technology creates many possibilities for such a development which is not acceptable from the standpoint of social democratization and human emancipation. Such a danger must be eliminated in due time since it is more intelligent not to create errors than to correct them later on (which is, not only in the last instance, more expensive).

With the development of information technologies, "information resources" in the twentieth century have become as significant for Man's development as were coal and oil in the past. The developmental possibilities of information technologies existed even before the development of the first computers in the fifties - yet they have greatly increased with the discovery of microprocessors and microcomputers. Today there is practically no system which can operate without a fairly well-developed technological system of information; the mode of processing information is an ever more important constitutive part of social systems. If in pre-capitalist societies direct perception and cognition sufficed for the production of adequate and sufficient information, if manual accounting was sufficient for controlling underdeveloped commodity production, today national systems need greater and more rapid systems of control.

Information technology is a reality - a reality which

has never before changed and developed so rapidly. Therefore the question cannot be raised: information technology - yes or no. Rather: How can we master its development and how can we use (and develop) it so that it serves strategic developmental goals? The effects of its development are evident in numerous fields:

- in the economic filed: the production of information machines and information has become the most propulsive economic branch, with exponential development of the possibilities of new technologies and the reduction of production costs;
- in the integrational field between "traditional" sectors and activities; organization and production technology influences the alteration of processes and results of production, the automatization of office work and services; influence on the reorganization of entire sectors of the economy;
- in the field of science and education: information technology influences the linking together of science and production, the development of traditional technologies, linking theoretic thoughts and real possibilities, pedagogical work;
- in the field of management: information technology gradiates either the centralization of decision making in an Orwellian vision or else its decentralization;
- in the field of international (economic, military, political) relations: at the present stage of development we can here most clearly see the double significance of new technologies in the present structure of the international community for they accentuate differences between developed and undeveloped countries due to the impossibility of the latter to at least follow the development of information technologies; they increase dependence of the latter as well as the "traditional" superiority/dominance of developed countries /4/.

In all the enumerated (and still other) fields, unequal development of information technology emphasizes the questions of Man's alienation and liberation, of the continuation and development of capitalist and socialist systems, of Man's role in the production process and in leisure. On the other hand, since information science and information activity actually, practically, link parts (individual activities, fields etc.) to the whole and yet at the same time reveal contradictions among them (class, ethnic, regional etc. interests), they contribute to the (re)affirmation of the cognitive dialectic in regard to the whole and to the contradictions within it. Information technology in itself does not determine "its own" social significance; this is determined by its mode of use in concrete society. From this aspect a challenge also arises for marxist social theory which, until the present, has avoided this problem and remained non-critical towards the ideologies of information technology - i.e. from equating the expansion of information technology, urbanization and modernization with democratic development, to reductionist conceptions and the justification of information technology as a basis for greater social production and (therefore) for the enrichment of Man's leisure time.

Optimistic forecasts which see in the new information technology a revolutionizing power that will transform the ancient inequalities in society have not been validated. Throughout history inequality, social contradictions, and suffering have increased despite new technologies. The fact that new information technology greatly reduces the time, space and cost of data processing does not mean that all classes, strata, groups or countries will benefit from these advantages. The enthusiasm accorded the new technology transfers the source of progressive social change from the agency of people working collectively to deal with their own problems to an impersonal technological instrument like the computer. The idea of the intrinsic emancipatory capacity of information technology strips it from the social structure in which it is embedded /5/.

It is no longer a question of whether information technology is now strategically significant; it definitely is. But the central question remains of who controls the information production and distribution and to what uses information technology is being put. Information technology can be used equally by those interested in the reproduction of domination and by those interested in the general welfare, to increase centralization, inequality and alienation as well as to achieve human emancipation. It is an mystification to label social (political, economical) constraints on information processes as "technical" or "natural" constraints, just as it is utopia to praise information technology as the Saviour of mankind. Information technology per se can neither emancipate individuals and democratize societies nor enslave the majority of both if not consciously activated, directed, and pointed towards these needs. It is not only a matter of producing (or just importing) new information technology, but equally a matter of knowing how to integrate it into the principal development goals of the society.

The analyses of information technology are widely narrowed to profit-oriented rationalization and not to social and/or political democratization, without a critical attempt to evaluate its present uses against other possibilities and actual alternatives. Information technology was constituted chiefly not as a liberating technology, but as one deepening the existing contradictions between labour and capital, centralizing processes of decision making, and alienating also the private sphere. However, new possibilities of information technology may in turn lead to significant new forms of a decentralised and democratic society that fully values the

individual. One such example in the economic sector was the attempt of Allende's government in Chile to establish a complex system that processed information on economic performance from all parts of the country in a central computer and, simultaneously, fed back to worker councils at individual work sites synthetic data so that they could make autonomous decisions /6/.

Socialist development makes it possible, for the first time, to overcome disorder by plan, but at the same time it raises problems that no prior society in history has yet been compelled to solve. Self-management is based on the close connection between direction, management and information. It presumes, however, an essential increase in the quantity of information in horizontal and vertical channels in comparison with all previous systems. With the increased complexity of a system such as self-management, the individual and society need an ever greater amount of more diverse information in order to truly become masters of themselves. Yet such an amount of information, if not adequately "treated" and prepared in accordance to needs, goals and purposes, greatly surpasses the capabilities of the individual and society and becomes the supporting structure of social centralism, monopolies and privileges. Necessary "treatment" entails not only a quantitative reduction in the amount of information. It is at the same qualitative, socially determined processing which makes it possible to distinguish between the real, the possible and the desired, between the essential and the non-essential in regard to concrete social development. This is not just a technical but also an eminently social question. In the same measure as information activity is (nota bene: ever more) the basis of political and all other social practices, it must also be the basis and object of social science, and in reverse: the less it is so, the more political (or economic etc.) practices becomes alienated as monopoly activity and the more social science loses from its field of study the object for which it has been constituted - social relations.

Though now more developed than ever before, technology remains subject to the ultimate control of non-technicians, bureaucratic officials and political appointees /7/. But, while the technical staff is alienated from the ends, the officials are alienated from the means, since they know little about the technical processes. In such a situation, and with the growing complexity of social relations, there are increased difficulties in adapting the new technology to the needs and interests of the democratic social processes. There is an urgent call for interdisciplinary analysis not only at the level of empirical (positive) knowledge about possible technical (in Habermas' sense) disposals, but also at the level of hermeneutical knowledge about procedures of intersubjective understanding, especially at the level of critical-dialectical knowledge based on the emancipatory interest. Only by achieving this level through a self-reflection of the base and process of knowledge will science become a means of emancipation /8/.

The development of information science, for the first time in history, makes it possible for the dialectic of the process of knowledge not only to perform as the subject in philosophical analysis and didactic orientation, but rather as an operative guideline in empiric social research, i.e. as a bridge between fundamental theoretical concepts of dialectic and empirical research practice. This enables the surpassing of partial social research which was necessary until now because of limited techno-material possibilities. Yet not only can/does the development of information science further social science, not only does it enrich critical thought as a factor in social development; without such an interlinkage of social science with information science, the development of the latter can become discordant with social needs and collective interests.

A paradigmatic argument for the inclusion of information science within the social sciences is Marx's claim that the most general abstractions occure only alongside a most rich concrete development where something seems to be common to many, common to all. With an ever-greater degree of diversity and complexity in social development, the following questions expressly come to the fore: To what extent (also in regard to information technology) have our theoretic generalizations and explanations been capable of expressing the actual wealth of diversity, or, conversely - to what degree can we test general-theoretical formulations and establish the limits of their validity in the concrete reality of social life? Precisely the development of information science makes it possible to more fully grasp the entire spectre of social variability and to conduct more complex analyses. Instead of "passive coexistence" (separation) of theory and practice characteristic until now, possibilities are indicated for their constant reciprocal verification and productive complementation.

The development of information science makes it truly possible for the gathering of data to overcome "the head of Medusa" and contribute to the uncovering of transformation from the subordinated and less developed to its extensive and intensive development. In the higher forms of social development, instead of simplified aspirations towards ever greater extensiveness ("a greater amount of data"), the most important question concerns most explicit explanations using the smallest amount of data - in other words: how to arrive at those developmental characteristics (i.e. concepts, variables) that have the greatest explanatory and predictive (prognostic) power. Such a postulated rationalization in gathering and storing data can only be reached interactively: by permanently validating the actual results of empirical research as well as by systematically testing and more rapidly introducing new conceptual categories (e.g. as economists, in co-operation with statisticians and on

the basis of long-term systematic observation, have introduced the concept of "national product" etc.).

The history of economic indicators reveals that they essentialy contributed to the development of the science of economy, introducing more clear concepts of the measure and the standard. Nowadays, they are indispensable in economic performance in directing, coordinating, monitoring, and recording more effectively, productively, and rationally activities taking place within the economy. Development of complex economic indicator systems implies two important trends related to information activity /9/. The first trend is the growth of the information sector of the economy, comprising such activities as management, administration, clerical work, accounting, banking, advertising and other information services. The second trend is the emergence of advanced information technology with a raising of information processing efficiency. Both trends, which might not be realized without active "intervention" by social policy makers (e.g. governments, interest groups, political parties, and especially large corporations), severely influence all other social structures which fall outside the conceptual space defined by the strict economic indicators.

Since the late sixties, a relatively large number of attempts have been assessed on the development of comprehensive systems of social indicators. Obviously social science followed, with "social indicator movement", the path of economic to become a true "big science" with a chance of exercising significant social and political influence, for centuries reserved for natural science and technology. Some crucial problems arose from this new orientation, aggravating questions concerning the impact of science on society (e.g. stabilization vs. criticism) as well as the impact of social institutions, especially political, on science, and consequently the question of the social responsibility of science. In addition, systematic methodological, theoretical, and empirical work was dedicated to the development of cultural indicators aimed at more systematic and precise views on the less institutionalized structure in society - culture - and its relations to other social structures. Lastly, but not leastly, advanced multivariate statistical techniques were introduced which made it possible to relate the theoretical framework with large sets of empirical data.

The social effects of information activity and the development of social and cultural indicator "movements" in social sciences reveal the importance of an inter-, even transdisciplinary-study of "information society". The further development of social sciences, including their impact on society, cannot be achieved simply by application of some knowledge about information processes developed elsewhere. This particularly holds for sociology and political science which aim not only to use information technology for their own development, but also to understand its social role and, consequently, to change it. It is quite obvious that critical-dialectical (or emancipatory) knowledge cannot be attained by a limited amount of "additional" aspects in research or by way of "optional" courses in education. Such an orientation necessarily runs in practical apology or, at most, in noncritical application of information technology and science in social sciences and in entire societies, looking for problems to which to apply a method rather than approaching problems in a critical "flexible" way, looking for methods that are appropriate, i.e. valid.

When considering our present experience and developmental possibilities for the implementation of computer and information science, we must establish the fact that the possibilities of integrating science and production, bridging the gap between different information resources, rationalising division of labour, developing rather than denying cultural identity - as well as many others - are still far from being fully utilized. In spite of the quantitative growth of information activities in the developed countries, there is no need to underscore the qualitative shortcomings of this process. On the other hand, the developing countries are only now facing this profound social change, are being confronted by the crucial question of whether to follow the path of industrialized countries or to build their own model of development. One of the main reasons for the many inadequacies, deficiencies and mistakes in the economical, social, cultural, and ecological spheres forced by the new technologies in both developed and developing countries is precisely the lack of knowledge. The microelectronics and information "revolution" is not exception, unfortunately, mainly due to the absence of a social command of these technologies. Such failures can only be suppressed by systematic information science education for professionals in different fields of social activity who, besides having a knowledge of their own specialisation, would also be sufficiently acquainted with the possibilities and effects of using and developing information technology.

Information technology opens up the possibility of introducing new forms and aspects of work which, to a certain degree, are or can be common to diverse fields, and which are also specific primarily in the sense that they develop detailed knowledge and information for solving specific problems in given fields (e.g. in sociology, economics etc). This shows that a certain knowledge of information science is necessary today in all fields, and that there is, at the same time, a common and equal need for professionals who would be experts in their own fields: in work organization, employment, political processes, education, ecology, etc. and who would be familiar with the possibilities of information science to such an extent that they would be able to carry out the introduction and development of new

methods in "their own" professional fields.

In developed and differentiated science and society a "universal information scientist" cannot carry out such a creative role. This problem, until now, has not been resolved due to underdevelopment of, on the one hand, separate professional fields, and, on the other hand, information science. Continuation of the present practice renders impossible the optimal development of both, particularly in two key aspects: in regard to the application of information science for the effective resolution of tasks in the field of social activities (construction and functioning of the information systems), and in regard to solving social problems connected with the introduction of information technology and the development of information activities which are already the subject of analysis in various social sciences but for whose resolution a deeper knowledge of information science is required. How, otherwise, can the social scientist masterfully take up the question of robotics, employment, work organization, urban development and communication, "paperless" society, computer aid in education, planning processes, prediction and decision making and social development? Without a real knowledge of information science this can be done practically only in an utopian, science fiction or idealistic manner!

What are the basic fields of work on, and study of, "social information science"? We shall enumerate several that prove the specificity of this field:

- Analyses of the social aspects of information science: influence of information activities on the social productivity of labour, "information society", information activity and the satisfaction of individual, collective and social needs, realization of self-management rights, economic and personnel aspects of introducing information machines, the international information system.
- Participation in the preparation of information systems; critical analysis of information flow; rationalization of work procedures; organization, execution and direction of information systems, for example in the statistical information system, the communal information system, the education information system, the information system for personnel planning, planning reseearch work on the level of local communities, communes, republics, the information system in the fields of social security, spacial development, child care, the information system of socio-political organizations, of organizations of associated labour, information systems for the needs of self-management, decision making and planning, social self-defence etc.
- Participation in middle and long-term planning of equipment and personnel training as well as consulting in the processing of data in specific fields, for specific consumers.
- Participation in measures for safe-guarding data, security of personal data, and protection of information from the aspect of defence.
- Determining indicators for changing social processes (primarily for the purposes of social planning and management), establishing their relevance in time and space.
- Participation in the gathering, processing, and preparation of information and in communications to various consumers (identification of the consumers needs, relations among data in organizations as a whole, collecting and gathering relevant information, presentation of information in regard to posed requests, establishing feed-back processes).
- Formulating and managing the data bases and organizing and directing information centres in social services and in administration.

In order to educate future professionals to carry out such complex tasks in the fields of social sciences, the following scheme for the curriculum* of information science undergraduate education for social scientists has been suggested:

I. Social Science Unit
Philosophy (150 hours)
Political Economy (90)
Economic System in Yugoslavia (90)
Political System of Self-Management (60)
Political Organisations (45)
Social Anthropology (60)
Modern History (60)
Political Science (Introduction) (105)
Sociology (Introduction) (150)
Communication Science (Introduction) (75)
Socialism in the Modern World (60)
International Relations (60)
Dialectics and Logic of Social Research (90)
Methodology of Social Research (90)
Theories in Sociology (90)
Sociology of Work (90)
Sociology of Family (60)
Sociology of Local Communities (90)
Sociology of Culture (60)
Sociology of Science and Knowledge (90)
Sociology of Religion (60)
Social Demography (90)

II. Information Science Unit
Mathematics (150)
Foundations of Informatics and Information Systems (180)
Computer Programming (135)
Data Bases and Structures (75)

*Suggested by the Department of Methodology at the Faculty of Sociology, Political Science and Journalism, University of Ljubljana (Draft, January 1984).

Foundations of Statistical Analysis (150)
Multivariate Data Analysis (150)
Sociology of Information Processes (180)

Optional Subjects (270)

Mathematical Programming
Prediction and Planning
Computers in Documentation
Statistical Text Analysis
Indicators of Social Development

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Conference paper

EDUCATION FOR NEW PROFESSIONAL ROLES IN THE INFORMATION SOCIETY

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Abstract

Today's societies are characterized by problems that need the knowledge and problem-solving skills of various professions and disciplines. These problems may be scientific, ethical, economic, social and technological in nature. Furthermore, new modes of telecommunication and direct information dissemination to people in their homes require the creative uses of various media. The movements toward self-help, consumer rights and environmental protection pose challenges to communities. Information professionals can play an important part in these processes in many kinds of organizational settings.

To provide examples, the paper discusses five areas of information work which require a new combination of knowledge, professional attitudes and skills: information resource management, information counseling, research utilization, social networking and public information dissemination. Education for these roles cannot depend on established models or textbooks. Students need to be involved in research projects, interdisciplinary seminars and field work at alternative sites. The paper emphasizes international perspectives and cooperation as the basis of educational development.

BACKGROUND AND EMPHASIS

In 1982, a paper given at the Workshop of the Education and Training Committee of the International Federation of Documentation in Hong Kong reviewed developments in information education in North America (Dosa, 1982). The present paper, therefore, will take a different approach. It will discuss selected interdisciplinary areas in information transfer where educational innovation is needed to meet the challenge of emerging activities and professional roles in the United States.

A professional role includes an attitude, an approach, a way of thinking and a vision of the world. It is the result of society's needs combined with individual inventiveness. It represents the professional's theoretical preparedness, ethical value system and set of skills. At its best, a professional role forms a bridge between tradition and change. Educational programs aimed at preparing people for emerging roles in an information society need to integrate curriculum, social awareness, professional standards and ethics, research, policy analysis, and field experience with practitioners.

A review of the literature reveals an underlying concern with current approaches to education for librarianship, information science and archives/records management. Should the emphasis be on generalization or specialization? Do the surveys of professional manpower needs and the wider business of information give any guidance for educational planning? A study of supply and demand in the library field indicates that "the decade of the 1980's is expected to show an even smaller increase in librarian employment than the rather stable 1970's, with no anticipated return to the boom period of the 1960's" (King Research, Inc., 1983). On the other hand, surveys conducted by the Data Processing Management Association, the Information Industry Association and other groups signal a phenomenal expansion of the market for alternative information-related careers. The preparation of professionals for the new market in addition to libraries where increased specialization is being expected poses a real dilemma for educational planning.

Lancaster (1983) writes that "the center of our attention must be the professional information specialist and how this individual can assist the communication process." Other educators caution against an unrestrained direction toward educating "generalists", but support the value of interdisciplinary communication. For example, Clough and Galvin (1983) ask what possible advantages might accrue to the special library "in having on its professional staff a person who can move knowledgeably among, and command the respect of, the firm's computer and telecommunication specialists?"

In preparing this paper, I used emerging professional roles rather than types of information facility or types of information professional as a guiding theme. The five selected roles - information resource management, information counseling, research utilization, social networking and public information dissemination - may be an asset to any information professional in any type of information facility. This approach is selective

rather than comprehensive, but it might offer a few observations from the point of view of educational innovation.

THE INFORMATION ENVIRONMENT

Today's societies are characterized by problems that need the knowledge and problem-solving skills of all disciplines and professions. Whether these quandries manifest themselves in the economic, scientific, social or technological domain, they have an unnerving impact on the quality of life (Conservation Foundation, 1983). There is considerable confusion as to the roots, nature and extent of these problems. In the United States we have seen the rise of numerous social movements advocating one solution or another. Moreover, members of various scientific disciplines and service professions seem to be in disagreement as to the most promising approaches to remedies or the forestalling of threats. The conflict of choosing from a wide range of social and technological alternatives is demonstrated in the arena of environmental management. While an economist recommends tax incentives and a legal expert wants to prescribe punitive measures, a sociologist believes in institutional regeneration and an educator speaks of the importance of individual value systems.

Theodore Caplow once observed that "...a greatly improved society might be within our present grasp if projects of social improvement were undertaken in a more rational way... We already have most of the theoretical knowledge required for a competent social technology (Caplow, 1975, p. vii). He diagnosed the problem as the difficulty of using and applying existing knowledge. There is a growing number of researchers and science policy makers who share Caplow's frustration. Together they generated a trend toward the systematic use of monitoring, assessment, forecasting and social feedback techniques in environment, health, energy and other fields. The nation is investing extensive human resources and material output in research, development and their applications to problem-solving. But as a result of an incomplete understanding of the human aspects of knowledge transfer, research has not always reached the applications stage. The current national interest in knowledge transfer attests to the significance of information as an indispensable resource. New ways are sought to manage this resource and to improve its use in decision making and private sector productivity.

Some information professionals already play an important part in these processes in many organizational settings. In managerial, organizational and mediating roles, many of them have transcended their original function of working with information media and became involved in the transfer of the information content. Some build on their specialization in a subject field and others use their capability to bring together and synthesize information from a number of disciplines. In any case, they have to keep abreast of new developments in the social environment as well as in their own organizations and communities. Their success seems to lie in a combination of thought, initiative, communication and the thoughtful use of new technology in their work. It seems that the most effective educational programs will be those which involve research as well as the experience of these innovative practitioners.

INFORMATION RESOURCE MANAGEMENT

Views and Definitions

Currently most educational planners treat management as one segment in the curriculum. For example, in August 1983, the educational bodies of the International Federation of Library Associations and Institutions (IFLA), the International Council on Archives (ICA) and the International Federation for Documentation (FID) met in Vienna in search of a core management curriculum. Such endeavors stem from the institutional orientation of information education - a powerful current paradigm - that envisions the application of managerial knowledge and techniques in libraries, information centers or archives. Educational programs built on this approach are now supplying most of the managers and administrators in the information professions.

Simultaneously, executives and policy makers in public and private organizations have been seeking ways to turn general managers into the overseers of all kinds of information-related activities in their organizations. This effort uses mainly in-house retraining and the workshops of professional associations as educational mechanisms. At the interface of these two trends - one changing information professionals into managers and the other changing managers into information professionals - a new professional role has evolved. The professional information resource manager is making inroads into academic programs as well as into the workplace.

Information resource management (IRM) as an academic program includes theoretical investigations and professional preparation. It prepares practitioners for the integrated planning, management and evaluation of various information processes and systems in an organization. The program includes the study of economic, social, legal and psychological aspects of managing information systems and services. Communication with users, potential users, management and the general public is strongly emphasized. IRM is also a way of thinking, the ability to use the systems view, and the capacity to perceive the relationship of policies and practice.

Emerging Roles

The development of IRM originated in the recognition - not confined to the United States - that the internal and external information resources of an organization have a powerful impact on productivity and effectiveness. It was also recognized that there was no one model for the coordination of the use of resources. Management needed initiative to adapt IRM principles to the unique culture of each organization. While in industrial companies IRM became a company-oriented activity, the federal government, by its legislative and regulatory functions, provided standardized IRM policies for its departments and agencies.

In the 1970's studies conducted by the National Academy of Sciences, the National Science Foundation, the Library of Congress and the Commission on Federal Paperwork have identified the need for the improved management of information resources. The following responsibilites of an information resource manager in each government department were proposed:

- Review departmental information activities,
- Plan meeting information needs,
- Prepare a coordinated information policy,
- Inventory information resources,
- Monitor information activities,
- Recommend improvements in the department's information systems,
- Advise the department head on information matters, and
- Represent the department in information matters, (U.S. General Accounting Office, 1979).

Under the Paperwork Reduction Act of 1980, each federal department and agency is expected to appoint a high-level information resource manager to coordinate the collection of data from the public, cost accounting for information activities, and the management of hardware and software. Amendments to the law, currently under consideration by the Congress, would require a combined revolving fund for "Automated Data Processing and Telecommunications" - further evidence that information resource management encompasses responsibility for both.

The proposed occupational standards for IRM (not official) stated that "the information management program encompasses the coordination and synthesis of the many disparate functional activities in any organization which have as their common end purpose the task of meeting the organization's information requirements" (Horton, 1979).

Education and Training

Examples for manpower development can be drawn from the government, academia, industry, and professional associations. In its Graduate School, the United States Department of Agriculture offers an IRM program for continuing education. The program provides "Certificates of Accomplishment" rather than a degree, but its courses are accepted by the United States Office of Personnel Management and many state and private degree-granting institutions. Subjects in the curriculum were described for the professional community by Montie (1983).

The Master's of Information Resource Management program at Syracuse University was initiated in response to a need voiced at numerous conferences and working meetings. Other academic institutions, especially the University of California at Berkeley and the University of Denver, offer IRM programs. Professional associations and private information companies assume the largest part of the responsibility for short-term training programs, workshops and seminars. In a closely related field, office automation (OA), a Curriculum Roundtable Project of the Office Systems Research Association (OSRA) is at work "to define a discipline for administrative information systems that could be used by colleges and universities establishing programs in this new field of study" (Information management, 1983, p.8).

An IRM education program has a special mission that is not yet sufficiently appreciated: it brings together students preparing for work in government as well as in private corporations. The traditional pattern of separation of business management programs and public administration programs was only recently broken by the establishment of Yale University's new School of Organization and Management. The IRM programs, on the other hand, started out with the principle of interaction between government and business.

INFORMATION COUNSELING

Views and Definitions

Many information professionals still see information resource management as an isolated activity managing systems "behind the scenes" with little direct interaction with end users. Actually the infrastructure of communication and information systems depends entirely on its interfaces with people for its success. One of the most important roles in the use of resources is information counseling.

The role might be defined in several ways. Mostly it means personalized professional guidance not only in the identification and retrieval of information that bears upon a given task or problem, but also in its evaluation, organization, use and application. Online searchers and librarians are not information counselors unless they develop the in-depth counseling interface with the user. On the other hand, research assistants, legislative aids, consultants, information brokers and educational counselors provide a great deal of informa-

tion counseling even if they never heard of the term.

Several factors contributed to the need for personalized counseling for information users. People's awareness of the utility of information at the workplace and in private life is increasing more rapidly than the availability of training opportunities and other aids that would assist them in information seeking skills. As they learn to interact with a specific information system and become accustomed to its use they are likely to miss other relevant resources. In spite of constant enhancements, information systems and services are not always responsive to cultural or individual needs. "Cultural translators" are needed to reduce the complexity of information seeking situations and repackage information into usable units and forms. The legal ramifications of information (ownership, protection, security, privacy rights, data integrity, economic interests, insurance problems, etc.), are becoming too complex. Trust is a key element in communications between the information source and the user. Furthermore, many users today work on interdisciplinary problems and cannot possibly keep abreast with new information and terminology emanating from disciplines bordering on their own.

Among the research areas pertinent to information counseling are human factors engineering, artificial intelligence, user interface design and information use studies. Some aspects of the state-of-the-art in this research have been reviewed by Ramsey and Grimes (1983). The energy of this complex research field flows into creating systems that are more and more "user friendly". As a result, decision support systems assist managers and professionals, expert systems inform medical diagnosticians, and personal workstation, interactive graphics and other devices appeared at the workplace to narrow the gap between the user and the resource.

In spite of these huge strides toward information access, a closer examination of the literature reveals a strange contradiction that poses a problem for educational planning. Complaints about both inadequate utilization of knowledge and information overload have not diminished. There is plenty of information to retrieve with relative ease, but the information is not being turned into knowledge with equal efficiency. Yet currently there is little interest in information counseling, the link between all types of information sources and the knowledge of the end user.

Emerging Roles

Information counseling implies more than a series of ad hoc exchanges with the information user. The emphasis put on the reference and search interviews by information professionals is a big step into the right direction. But as the word "interview" suggests, we are dealing here with ad hoc and short-term interaction which is effective enough for giving "information" but not deep enough for assisting the user in integrating the new information with his or her world of knowledge.

There are, to be sure, librarians and online searchers who transcend the information-giving level by acquiring enough familiarity with the user's range of interest and inquiry through extended collaboration. The clinical librarian working daily with the medical staff in the hospital and the corporate information specialist performing frequent searches for the same managers and researchers are in the position to become information counselors because they can foster the kind of continuity and trust that is necessary for dealing with problem domains of users. Moreover, they can explore the periphery of a given problem, span disciplines and trigger unexpected associations in the user's mind.

Hershfield (1972) recommended the use of quantitative research methods, philosophy of science, data gathering and analysis techniques and documentary research as the requisite tools of information counseling. Debons (1975) designed an educational program, and Brindle and Dosa (1981) proposed research to test the application of the counseling process to information services for specific cultural and ethnic groups. Horton (1982) described information counseling as a new career path and predicted that "in the increasingly information-rich world we're heading for, with its incredible proliferation of databases, library networking, and the like, users will need more and more help." Horton saw the role of the information counselor encompassing such diverse aspects as economic advice in selecting information sources, media and modes of information delivery, and conflict arbitration among users, managers, suppliers and handlers.

Some consultant firms already assist the information manager in industrial organizations to become an intermediary between data sources and management. Van de Bogert (1982) sees as one of the intellectual functions of the information manager the conversion, interpretation, advising, suggesting, predicting and selecting of the right set of data to be used as a conceptual tool by management. Probably the most compelling argument for information counseling is the need for human creativity and intuition in the information transfer process. An example can be drawn from the work of systems analysts. Kimmerly (1982) suggests that current practices in systems analysis place excessive emphasis on technical details and mechanistic methods. In addition to technical competency, Kimmerly suggests, the systems analyst needs "a highly developed and focused aesthetic sensitivity, coupled with a capacity for imagistic thinking." This capacity would help the systems analyst to perceive the changing

needs of an organization and design or adjust systems accordingly.

Education and Training

Except very rare efforts to formally introduce information counseling into the curriculum, information and library schools address this need only by a few units in courses and by continuing education workshops if at all. The courses that are the most likely to serve as a home to the subject fall into three categories: (1) online searching, (2) library (or information) and society, and (3) user behavior and needs. Courses in the first category hardly ever venture beyond the search interview and rarely conceptualize the complex role of counseling. In the second category, courses sometimes cover information and referral services in communities and public libraries. The third category is the most likely to include courses where user needs, search patterns, barriers of communication, the evaluation of user satisfaction and related issues are discussed. There is an urgent need to prepare information counselors as the complexity of information resources and structures continues to grow.

RESEARCH UTILIZATION

Views and Definitions

We cannot assume that following the completion of a research report the dissemination and use of findings will automatically take place. The problem of research diffusion and utilization have received much attention in recent years. Several disciplines in the social sciences are investigating the phases that take place in knowledge transfer and implementation (Gray and Roberts-Gray, 1983). In information science, we have seen the growth of post-publication diffusion theories, phenomenalistic examinations of the research literature and studies of information use patterns. Management science explored the relationship between researchers and managers as early as the 1960's (Churchman, 1974). The searching for models and exchange of findings expanded from scientific papers and monographs to entire journals with the publication of the Journal of research communication studies (Elsevier, 1977/78) and Knowledge (Sage, 1979). Pioneering works such as Rogers' Diffusion of innovations are appearing in revised and expanded editions further attesting to a widening of interest in the problem (Rogers, 198). Finally, in the field of education, we are witnessing the proliferation of diffusion studies based on the "linker" model of Havelock (1969). One question winds itself throughout the literature: "What separates knowledge from innovation and how can the gap be closed?"

The literature of innovation rose to prominence in the early 1960's when studies were carried out mainly by academic sociologists and economists and continued into the 1970's when much of the research was conducted by political scientists. Other disciplines, especially anthropology, geography, public administration and, to some extent, information science, contributed to the investigation of knowledge diffusion and invention.

Innovation has been defined as "...the process by which problems are identified and solved, needs are met, materials are made available, and new concepts are added to society. This is its role as an engine of change" (U.S. Office of Technology Assessment, 1978). This definition suggests that research utilization might be described as all those activities and methods that make information about research findings available to potential innovators. There are four related areas here which are potentially important to information professionals: (1) information dissemination, (2) utilization of information and research by practitioners and policy makers, (3) the impact of research and information on innovations, and (4) the sociology of knowledge (Shils, 1982). These areas are important additions to the information science curriculum especially where user-orientation is emphasized.

Emerging Roles

Faced by the problem of research dissemination in recent years, most interdisciplinary fields established clearinghouses research analysis and dissemination activities, and referral services. Such centers have been either mandated by federal legislation and operated by private organizations under government contracts, or created by professional associations for their membership. In addition, information suppliers, database providers and educational institutions started clearinghouse-type activities for research dissemination.

An information clearinghouse is usually responsible for:

- Identifying the clientele or potential users,
- Collecting, analyzing and evaluating data or needs,
- Formulating objectives and policies,
- Cost benefit analyses of services and products,
- Identifying the research area and the published and "fugitive" literature to be analyzed and planning the form of output (abstract, digest, etc.) and the medium (print, microfiche, database tapes, etc.),
- Designing the information system to perform the tasks,
- Establishing performance measures, monitoring techniques and other evaluation research methods,
- Selecting the right combination of equipment, software and procedures,
- Developing and implementing an information marketing strategy,
- Implementing services: Query answering, information packaging, document delivery, newsletter, etc.,
- User training,
- Networking of resource persons and specialists; com-

munication policies,
- Maintaining awareness of information policies, laws, standards, etc.

As clearinghouse-type facilities continue to proliferate in society, education programs need to prepare students for (1) need assessment and evaluation research, (2) communication techniques, (3) management of in-house databases and use of microcomputers, (4) the goals and process of information dissemination, and (5) familiarity with the literature of knowledge diffusion.

Corresponding to the theoretical literature of diffusion, knowledge utilization and innovation, there are information-related activities that provide new roles for information professionals. These jobs may bear titles such as "Research Coordinator", "Planning and Research Associate", "Policy Analyst", or they might be in local government, private business, hospital administration or a planning agency, but essentially they all need the information professional's skills of analysis, evaluation and synthesis.

Education and Training

Characteristically, students interested in this area have been taking selected courses in the social sciences. Where an information science or studies program developed its own courses on information policies, knowledge utilization, or the sociology of knowledge, the course usually attracts an interdisciplinary group of students from other departments. Such interaction at the graduate level has the significant benefits of expanding the horizons - and often the job markets - of information and library school graduates.

SOCIAL NETWORKING

Views and Definitions

We distinguish "social" networking from all other types of networking activity by the informal nature of interaction among individuals. Usually its purpose is to exchange ideas, share resources, provide mutual support and disseminate information. Information education is of course interested in library networks, telecommunication networks, organizational networks and many other types, but in the context of the present paper, two kinds of networking stand out as most relevant: (1) interpersonal networking of specialists for information exchange, and (2) community-level networking of human service agencies for information and referral. We will discuss only the first kind in this section as a very good process for knowledge utilization.

However, to provide first some background on the networking literature in general, three works should be mentioned. Each endeavored to bring clarification of concepts, a review of practices and a synthesis of the literature into the picture. In chronological order, Sarason and others (1977) charted the history and phenomena of human services networking: Pritchard (1978) provided a conceptual and developmental state-of-the-art review of international networking in education; and Lipnack and Stamp (1982) reported on a pilot project undertaken to construct a typology and review of networks in various social and professional settings.

Since the 1960's, a considerable body of research findings on informal communications in science and technology have been published by social scientists. This research is now well known and widely cited. Studies clustered mainly around four phenomena: (1) interaction among scientists: the invisible college, (2) the role of the information gatekeeper, an effective relayer of information in organizations, (3) the dissemination of research to practitioners by networking, and (4) interagency linkages in human service delivery. Naisbitt (1983) wrote that "networks can go beyond the mere transfer of data to the creation and exchange of knowledge. As each person in a network takes in new information, he or she synthesizes it and comes up with other, new ideas. Networks share these newly forged thoughts and ideas." In various ways, the four types of networks represent concepts and attitudes of information users that should be familiar to students.

Traditionally, researchers studied the informal communication patterns among experts in a narrowly specialized field such as sleep research (Crawford, 1971) or high energy physics (Zaltman, 1974). Recently, somewhat more formalized networks using human resource database and directory, became the favored mode of information exchange in cross-disciplinary areas attracting the attention of researchers. Unpublished information sources (project reports, papers, feasibility studies, policy statements, data files, etc.), are shared with peers in a network on the basis of personal contacts and trust. The effectiveness of information sharing is contingent upon a number of psychological, political and cultural variables. The use of personal computers, electronic message systems, teleconferencing and other modes of interaction are creating new opportunities for exchange. Projects are now in progress examining the phenomena of human interaction mediated by computers and telecommunications. This research as well as the social trend toward the use of interpersonal information channels is expected to have a strong effect on libraries and information centers.

Emerging Roles

The growing complexity of social structures and institutional red tape prompts many individuals to seek support and opportunities through contacts with each other. Alternative modes of management, work, self-

improvement, and personal life styles are altering the ways people look for and acquire information. Office automation is already changing communication at the workplace (Rice, 1980). The use of personal computers and the coming of home-based videotex systems, especially Viewdata, is expected to further decentralize information gathering.

New situations created by new technology bring with themselves not only a host of new advantages but also problems that information professionals will have to solve. For one, interpersonal networks are becoming more institutionalized with the creation of human resource databases and need to be managed as any other information facility. Concerns for privacy protection, proprietary rights in regard to data, accuracy of information, equity of access and liability for misinterpretation are raising new areas of information policy. Organizations networking with clients or consumers are discovering the urgent need for formulating in-house guidelines and keeping up-to-date on national information laws, regulations and standards. There is evidence that a large number of corporations and private not-for-profit organizations which never before had a library are seeking a better understanding of how to organize and use their increasingly complex internal and external knowledge resources. Information professionals who stepped into this policy void became the new managers of the resources and the new coordinators of the networks.

Education and Training

Describing their search for a curriculum developmental model, two researchers in 1977 found that "information networks" were included in the literature as a subset of the discipline of information science. An analysis of information science curricula established that the subject of "information networks" was "beginning to show up in ... lists of courses included in information science curricula" (Lilley and Rodriguez, 1977). Their paper offered a set of working definitions, a prototype curriculum for a first graduate-level course, and a bibliography of key works.

No indication was found in the literature that since 1977 a similar effort had been made by other researchers or educators. A number of library and information schools offer courses in library networking; a few started giving courses on information and telecommunication networks. One or two programs developed information and telecommunication policy courses covering the legal and policy aspect of networks. But a comprehensive curriculum on the social, economic, technical, psychological and legal issues involved in networking still seems to be a product of the future.

PUBLIC INFORMATION DISSEMINATION

Views and Definitions

In the past, "information networking" and "information dissemination" represented two drastically different modes of communication. The first meant (and still means) interaction among several participants, each of whom generates as well as receives messages. Originally information dissemination denoted a one-way process of informing. In information science, the well known selective dissemination of information (SDI) involves an informing process aimed at each individual or a distinct group sharing the same interests, such as a research team. Like SDI, general information dissemination programs in the past followed the traditional pattern of one-way flow. Both kinds of processes were expected to benefit from retrospective evaluation and "feedback" from recipients. With its lack of ongoing interaction with the receivers of messages, the traditional information dissemination model resembled the innovation "diffusion" model of communication science. Both changed drastically during the 1970's when research in a number of social science disciplines produced results supportive of interactive communications. The "passive" audience of the past was gradually replaced by a new brand of information consumers who expected interaction and participation in the planning of dissemination programs.

Public participation in environmental and health planning, mandated by legislation and supported by groups of concerned scientists, has intensified in response to a series of crises upon discovering health hazards or resource shortages. Today the environmental, energy conservation, preventative health care and consumer movements depend on facts and data supporting their causes. The dissemination of information to the public is an essential tool of sharing ideas about the possible social effects of scientific and technical developments. A renewed faith in neighborhood cooperation, the determination to fight street crime and to preserve the immediate environment from deterioration bring groups together who want to keep being informed about the sources and means of self-help. Public access cable television is opening a whole new way of bringing the community to the homes of people. Public libraries collaborate with educational institutions to provide videocasettes of lessons and viewing machines for continuing education. Instead of the former linear process of dissemination from the few to the many, information is now passed around in the smaller and more intimate environments of communities.

Emerging Roles

One of the new functions of information professionals working with planning agencies, local government, public health centers and educational institutions is to serve as an information resource for social groups and individuals. This role includes assistance in local projects and workshops, editing of a newsletter, public speaking, the organization of speakers' bureaus and participation in local television programs. A long-standing need for computerized databases of human services is being met by information and referral (I & R)

centers which often turn to information consultants for assistance. These database resources could not fulfill their missions without a well organized information dissemination program that continuously informs the community about their existence.

In all these dissemination efforts, information professionals can supply a unique blend of resource utilization, technical competency and communication skills. Many of them are naturals in small group problem-solving and instruction; they can extend information dissemination programs to workshops where people may practice problem-solving techniques and the use of local information for organizational and self development. In all these processes, the role of the intermediary turns around the concept of "science literacy." Science literacy is the ability of people to absorb new technical information and change it into personal knowledge. Information professionals as community service intermediaries understand the words of Peter Caws (1983): "Science literacy....requires more than a recognition of the facts of the case; it requires an understanding of the way they hang together, not only with one another but with all the other facts, or as many as are accessible at the time."

Education and Training

At academic institutions, several disciplines and professional schools are engaged in curriculum development and research in public communication. Programs in adult education, environmental education, health education, mass communication and social work are providing specialization in this field. Many library and information science courses include units on information dissemination. These educational opportunities, however, are not yet adequate for meeting the growing societal need for information manpower with an emphasis on communication capability.

IMPLICATIONS FOR EDUCATION

The roles that await information professionals will demand a broad interpretation of professional identity and the ability to span disciplinary, institutional and methodological boundaries. Because information is a social force and a means of personal advancement, probably the most important quality education must foster in information workers and students is the capacity to make ethical decisions on complex professional issues.

Curriculum innovation in the midst of rapid social and technological change poses a difficult problem. There are no established models and textbooks upon which education for the new roles in the information society could depend. Students need to be involved in interdisciplinary seminars, field work and research projects with the faculty. Cooperation with educational programs of other countries is essential because it creates an environment where ideas and professional insights can be exchanged. We need perspectives on changing times as much as we need the changes themselves. Only through increased respect and collaboration between researchers and practitioners and between professionals living on distant continents can information education fulfill its mission: the fostering of personal responsibility.

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EDUCATION FOR THE INFORMATION PROFESSIONS: THE INTERNATIONAL TRENDS TOWARD AN INTEGRATED APPROACH TO THE EDUCATION OF INFORMATION PROFESSIONALS

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"Words only had power when designed for the load they would carry and when they were well directed at those who could be influenced"

(Frank Herbert: Heretics of Dune)

Abstract

This paper lists a number of points related to the identity of the information professions, and examines the role of international organizations like IFLA, FID, ICA and Unesco in the work of the harmonization of educational programmes for these areas. It touches upon the impact of new technology and the growing internationalization of work within these fields.

Elements like costing of information services are briefly considered and the need for leadership development is underlined. The problems of professional change and adaptations are examined, and various factors affecting changes in the professional education considered.

This paper will deal with educational aspects of what I have chosen to name the information professions. This concept is found within the framework of information management and information science and embraces a number of more or less distinctive professional groups such as librarians, archivists, records managers, data base managers, indexers, abstractors, information brokers, to name but a few. My approach to this will be from the sector of librarianship, and from this standpoint a number of observations can be made, such as

- *In the central activities of all the professional groups mentioned there are recognizable library-like elements;*
- *It seems reasonable that these groups' professional education would have certain overlapping elements like, for instance, management, data processing, system analyses, indexing, classification and to some extent reference inquiries;*
- *This leads to the belief that it should be possible for these groups to benefit from interaction and cooperation programmes instead of from a fragmentation and underlining of differences.*

The area of the information professions thus broadly defined is an interesting one meriting scientific study in its own right, even if it is difficult at this stage to draw distinct intellectual boundaries between this broadly defined area and a number of other disciplines. This is nothing new, but rather a characteristic that this area has in common with almost any other subject area. Even within the well-established professional life of old, clearly defined, disciplines such as chemistry and mathematics, there is an on-going expansion and withdrawal of some specialities in relation to the established core areas. We see that criteria for judging fields of research as interesting are constantly changing. An overlapping of subject areas is becoming increasingly common, and to-day we see more and more research taking place that combines a number of previously distinct areas of study in old established subject areas. This is most dominant in the social sciences, but we find it in all the other subjects as well. We should certainly bear this in mind when we examine the development of research and education in the information professions.

The larger body of which these professions are a part has long sought an identity. The 1950s and 1960s were characterized by different sub-groups (librarians, documentalists, information scientists, archivists etc) which all, time-consumingly, tried to define their speciality, spending much time and effort erecting their own clear boundaries, boundaries not normally easy to cross. The 1970s were characterized by integration, an integration much assisted by the new technology, particularly by the computer. In the Orwellian year of 1984 this has led to a situation where the desire for a common frame of reference for the different specialities within the information professions seems to be stronger than ever.

One manifestation of this is to be found in the curriculum of library schools. Some particularly in the US, have been working with programmes where "information management" is seen as the common denominator for a number of professions like archivists, indexers, information brokers, librarians, documentalists, record managers and the like, and comparisions are being made with other subject areas on the basis that all have their distinct specialities yet still have a common core; they are considered as belonging to one broad profession. It also makes sense to talk about a "core curriculum" in these contexts. The following listing of broad professional areas indicates this connection:

Business	Engineering
Accounting	Mechanical
Personnel	Electrical
Marketing	Structural
Investment	Nuclear
Production	Aeronautical
Law	Medicine
Civil	Dermatologist
Corporate	Geriatrics
Criminal	Internist
International	Pediatrician
Labor	Surgeon

Information Management

Archivist
Indexer/Abstractor
Information Broker
Librarian
Records Manager

In recent years international information professional organizations and UNESCO have taken a growing interest in this way of approaching information handling, concentrating on how it might be reflected in the educational programmes in use and those being developed for the future. It is hardly coincidental, therefore, that the first formalized cooperation between the large non-governmental bodies like IFLA, FID and ICA has been established between the educational sub-groups of these organizations. At the first joint "workshop" between these three organizations in August 1983 the focus was on educational matters. Of main concern was the discussion of a "core curriculum", and it was emphatically agreed that it would be much more interesting to build on the common elements that were obviously present instead of focusing on the differences that naturally also would be found. It was decided that these differences, however, should instead be treated as subject specialities based on a platform of common knowledge. The workshop focused on the theme "management for the information professions", and in its recommendations stated: "The participants at the workshop believe that now is the time for FID/ICS/IFLA to join forces in working towards an integrated approach to educational training. Furthermore, education and training programmes based on a common core of management topics may be considered the first important step towards a more united effort from these professions in making their communities aware of the role that archivists, information specialists and librarians play in preserving and providing access to the countries' information resources and intellectual heritage".

This emphasizes the importance of underlining the common elements. But even with this as a guiding principle, there are a number of obstacles to be aware of and to take into consideration when designing and implementing the individual programmes in the various countries. Thus, one of the recommendations states that "The workshop wishes to emphasize that it will be necessary to be aware that the topics will have to be adapted to

1. The local cultural, political, institutional setting of a given country origin;
2. The educational system of the country origin;
3. The requirements of a parent institution;
4. The need for programmes at different levels.

The workshop recognizes that the establishment of a common core of management, education and training will require further efforts to overcome problems, e.g. terminological differences and in reshaping teaching programmes".

This trend of looking at the information professions as being inside a wide framework with a common platform on which a number of specialisations could be built will hopefully have an impact on the professional education. If we once again try to look at this from the library point of view, we will see that the traditional library is beginning to play a part in an integrated information network, where new technology and in particular computer based technology, will be of increasing importance. This new technology will facilitate a reshaping and an integration of existing services, making possible a development that will gradually bring forward something more than just the transference of old tools to a new technology. The information professions seem to be gaining importance in society as a resource, building bridges between various parts of society, not least importantly in the areas of research and mass media.

Together they form a national resource offering possibilities for a detailed and as objective as possible picture of reality. At present the hunting for popular headlines from "popular" research areas (slimming, difficult illnesses, social conditions, education etc.) by the media produces a lot of "facts" that are scarcely

either neutral or easy to understand. The diversity of reality is not easily described in simple presentations. The extensiveness of the information and retrieving apparatus of the information institutions would be able to fill in the missing or misleading parts of such presentations. They would act like light houses on the media sea, for at present the media (abuses) the charts given it by researchers in such a way that citizens by the boatload face the constant danger of sailing astray and getting lost in the fog.

New technology has also given momentum to the old debate about centralized versus decentralized solutions for information handling machinery. Although, up till 1980, it was in favour of centralized solutions, the trend of technological development now seems to be directed more towards decentralized arrangements, but this presupposes certain demands for standardization and certain national and international organized cooperative schemes in order for the whole thing to function in an effective way. The large international programmes like UBC, UAP MARC, AACR 2 - to name a few - would hardly have been so in the public eye to-day without all that the computer technology has made possible. Thus it seems that the information professions' success within a given country will, to a large extent, depen on whether one can develop national services (a national bibliographic data base, nation union catalogue, national authority file etc.) that will be so good and so convincing that the information institutions will wish to use them because they are efficient and capable of meeting these institutions' needs. The success of such a development will not least depend on the quality of the candidates being produced by the education and research institutios for information professions in the country.

When it comes to categories of personnel, for instance information brokers in the USA, new tools and new constellations within the information professions have more than ever focussed attention on the question of what the cost of information is. Of course there is a cost factor connected with the production and providing of what we call information. Traditionally we will find attitudes within the information professions, particularly in the field of libraries, that information should be provided free of charge for the individual user. Inter-library lending, free of charge, has been organized within and between countries for years. However, a totally different money economy within this field has now developed internationally, for example the services provided by the British Library Lending Division. The discussion about paying for information services is heard more and more throughout the information professions. Using the library sector as an example, it seems fair to say that the new tools for locating information have made it possible to locate information much more effectively than before. This has, in turn, created a demand so big that in some cases it has lead to the breakdown of the old, free of charge, inter-lending. Solutions have included arrangements for certain libraries on a national level being responsible for certain subject areas, but again this demands the transfer of money and the funding of a totally different type than has been the normal pattern for information institutions up till now. It therefore seems fair to assume that the whole question of pricing information services and of money transfer and refunds within a country's information network will have to be one of the central issues in the future education of the information professions. This will be even more true when it comes to information transfer across national borders. On the whole, the economical and legal aspects of information transfer across national borders have been too neglected and not satisfactorily incorporated into the future education of information professionals.

It is said that every profession gets the leaders it deserves. Without taking a stand on the question of whether the leaders of the information professions are good or bad, it seems important, however, to underline that these professions need good leaders. A good number of information institutions, perhaps traditional libraries in particular, have a structure and organization developed through a series of historic circumstances. To-day's demand on these institutions will often demand their considerable rearranging, involving and including the leader and the routines that the services are run by. The question of its ability to train good leaders will also affect the reputation of the profession. An information institution will have to accept being evaluated by the same criteria as any other service institution. The effectiveness of the institution in relation to what its services cost other institutions or society should be measurable. Dealing with questions on quantitative matters like this, would put the information professional in a better position to evaluate his and his colleagues' efforts.

All of this raises the question of rearrangements. If rearrangements have to be made, what then is the rearrangement potential of the profession? Of course, the information professions will have their built-in resistance to change. This resistance, slowing down change, will be found on many levels:

- in the existing patterns of positions and jobs in the salary scales,
- in the labour union structure,
- in the patterns of organizations and professional associations, and
- within the educational system.

Normally it is no easier for educational personnel to reset themselves to adapt to new technology than it is for other professions. Still, the key to the success of the information professions in the future will, to some extent, be linked together with the resetting ability of the educational institutions, or - to quote Henry Minsburg - :

> *"Change in professions doesn't sweep in from new administrators taking office to announce new reforms, nor does it come from governmental regulations intent on bringing professionals under control. Rather, change sweeps in by the slow process of changing its professionals - changing who can enter the profession, what they learn in its professional schools (ideas as well as skills and knowledge), and thereafter how willing they are to upgrade their skills."*

Looking at the situation from this angle, it seems important that we to-day try to develop a profession with a broad area of interest, with confidence and strength enough to work together as specialists within the wider framework of an information profession, and possibly to also open up for other categories of personnel along the profession's borders. Or to quote Michael Buckland: "librarianship is too important to be restricted to professionals only." In my opinion this holds true for the whole of the information profession.

It has many useful and interesting aspects that we would like to share with others, as aspects of their professional educational programmes. We have the strength and the professional knowledge to be able to open up for constructive cooperation with other professions. Armed with professional confidence, we should not fear being overrun or assimilated. Information is like energy, and increasingly important commodity in world trade. Consequently there will be a growing number of new important jobs for information workers. The question is, who will be ready to offer their services? The educational institutions for information professionals are important parts of the motor that runs the machinery of society. Therefore they should see to it that their part of the motor interacts with the other parts at the right time at the right speed and with the right momentum. The tempo - now at an optimum when it comes to making use of information resources - should be maintained and increased. If not, the profession runs the risk of being crushed into pieces, of being no more then sand in the machinery. The result might easily be a lifelong imprisonment in a sort of very restricted reservation where society will exhibit some of the more picturesque information handling devices of the past, whilst others respond to the challenges that are now opening up before us.

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INFORMATION SCIENCE EDUCATION FOR THE 80s

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Abstract

The notion of "documentation" is grounded on some basic misconceptions: (1) the connection to librarianship, (2) retrieval of knowledge-oriented document descriptions, (3) orientation towards specialized formal institutions, (4) separation of information and communication. The recent boom in on line-systems is only an indication of these wrong developments. With the new information and communication technologies and their integration into "informatization" the field is challenged (1) to correct the faults, and (2) to make use of the revolutionary character of this development. Some aspects are: (1) concentration of immaterial forms of "information", (2) introduction of artificial intelligence, (3) decentralization and autonomy. Information Science has so far concentrated on two features (1) constructive, (2) empirical. It is necessary to turn the dominance to two new features (3) action-orientation, (4) strategic. Traditional training and education programmes may thus become less important (although as bread-and-butter basis still in existence). Much more necessary might be the shaping of "information innovators" which need a barrier-free climate to grow.

1. THE BASIC ERRORS OF "DOCUMENTATION"

There is a long tradition all over the world to look at librarianship, documentation, and information practice as being a rather closed area of occupational activity. This tradition is grounded to some extent in Anglo-American cultural traditions where libraries have always functioned as centres of reference to knowledge and communicative experience rather than being only stores of published material. It seems to me that in large parts of continental Europe the situation has always been a little bit different: centres of reference to knowledge and communicative experience were rather located near those institution which produced that knowledge or had functions to support users of knowledge. They were not necessarily libraries, contained libraries or affiliated to libraries.

Nevertheless, an attempt was made in that area to adapt the Anglo-American model of viewing librarianship, documentation, and information work as a closed area. This option was for some time supported by the phenomenon that knowledge seemed to be available via its published form, which was collected and made available by libraries. If we look at the FRG as an example, one can easily observe that this attempt failed completely. There are only very few information centres attached to libraries, very few libraries act as centres of reference to knowledge and education and training for the respective fields are sharply separated. Government responsibilities are scattered and there is almost no common denominator. Even if we accept that FRG can not be taken as an example for something but stands alone for itself, it might still be possible to take its case as a prototype of a development which might appear in a similar way elsewhere - or which at least might be avoided (or supported) in another places.

The situation which I am talking about could be described in the first instance by the statement

> *(1) Librarianship and information services may have had some common features but they never really formed a common area.*

Let me proceed with my critical remarks by taking a look at people. People look for a book (or an article) if they want to read a book. If they want to know something, they might accept a book as a source of knowledge if no better source suggests itself. It seems that for a long time we have confused these two rather different aspects and, by confusing them, have missed the perhaps really basic point: People very seldom look for knowledge. People very often have problems and in trying to treat or solve these problems they look for "information" which may be knowledge, advice, help, orientation, values etc. The search for knowledge is only one aspect of treating problems, or as we would say - "rationalization of action". Finding that knowledge in a publication may be another step but not

necessarily.

This consideration leads us to the conclusion that the assumption on which documentation or traditional information work was based was too narrow, if not wrong: to evaluate the knowledge content of documents and to provide access to such evaluations by retrieval systems. This leads to the statement

> (2) Documentation or information work as retrieval of knowledge-oriented descriptions of documents is too narrow to constitute an area of activity which relates to individual or societal treatment of problems.

This would, on one hand, distinguish proper information work more sharply from libraries (since "information" contains much more than documents) and would, on the other, relate it more to document stores than is visible from the knowledge-retrieval viewpoint: documents may contain more than pure knowledge and therefore may perhaps be nearer to "information" in the above-mentioned sense than is believed by the documentalists who, for example under the headings of "data documentation" or "fact retrieval", steer away from documents as their point of reference.

Let me complicate the situation a little bit more: Based on our wrong assumption about documents and their importance, we believed in institutions to define our area. Obviously it is necessary to have a strong and large institution to handle large files of physical documents. We thought that similar institutions would be necessary to handle knowledge and therefore we established information centres and tried to train people to fulfil specific tasks in specific information service institutions. Again, this was wrong to some extent. As the very basis of information is the need of individuals and groups to solve their problems, their very basic means of problem treatment is to turn for help which, in the first instance, they look for in places from which they expect help to be directed towards their individual needs. This may be specific formalized institutions but we all know from our own experience that before seeking help at a formalized institution, we try other informal sources.

We simply forgot and still forget that information seeking is part of a broader concept of problem treatment which leads to help seeking-for-knowledge. Information provision in most cases may then become an integral part of help in treating problems. Therefore, in the large majority of cases where people might need information or knowledge, they do not gain it from specialized institutions but from the process of being advised or helped by other people. This may be taken the other way round: knowledge or information is not the typical market where one product of a producer competes with similar products of other producers but where information products compete with the information provision capacity of all other people who very often do not market their services but provide them on a do-unto-others-basis: Help me and I will help You. This leads to a third statement

> (3) The very basis of information processes are not specialized institutions and services but the interactions between those who seek advice and those who provide it.

This would not necessarily mean that no institutions at all would be necessary:

- advice and help could become institutionalized (like advisory services, councelling)
- advisers may need information services for their own purposes
- very specific steps in this kind of information flow may require formalized institutions and services (like reference services).

But these "information agencies" do not cater for "information at large"; they fulfill only very specific roles in a process which is much more complex than we thought.

2. ON LINE–SERVICES

We are now better able to see why information services do or do not fail

- if they concentrate on the rare areas where institutionalization is necessary, they are successful (like patents where documents are the problem)
- if they relate to a market of formalized advice givers and advice seekers which are used to formalized advice, they are successful (like in business)
- they fail if competition is available which is less formalized, cheaper, more attractive etc.
- they may become successful if they are combined with a whole spectrum of services people need if they have to treat problems.

Let me state it more simply: the effort-benefit ratio of most formalized information services of a classical nature is too bad for users. These services would therefore never pay off if they were considered only as market phenomena. They would possibly still survive if there were other reasons like

- saving information for cultural purposes
- using information for political purposes

but nevertheless, even under these circumstances one would have to consider alternative approaches perhaps to meet the same purposes.

This is the moment where technology has to be considered. "Documentation" has always been a field (distinctive to librarianship) where technology was

something that was essential to fulfil its approach (libraries could make use of technology as a support but could work also without any at all).

The way towards an "information profession" started with technology of a specific complexity (which could not be handled by a layman). As long as information services had to rely on manual and private bases, they were a small sector dedicated to a rather small group of users.

In fact, they were always behind the developments of needs, publication trends and scientific findings. The new technologies lying at the basis of on line-services seemed to improve that situation because

- large amounts of data could be handled
- time lags could be reduced
- different services could be elaborated from the same data base
- cost effectiveness relations could be improved.

But in the initial stages there were some serious problems, ones that still remain today

- on line-technology is a "large" technology requiring large capital and therefore large markets (which are difficult to establish, as pointed out)
- on line-technology was used as a new means to do the same as before (we established manual catalogues on electronic equipment)
- on line-technology was only a first technological step, albeit a rather humble one.

If we look at the current presentation of information work, it seems that this field of activity is focused on offering bibliographical services not much in demand, from methodologically outdated data bases via expensive and specialised on line-facilities. They are offered by specialised institutions which increasingly operate at a loss, sponsored by larger enterprises which consider them not as a bona fide activity but as a side-effect filling a gap in a spectrum of services (either publishing or electronic data processing).

The information "profession" or "industry" which relates itself to traditional "documentation" or librarianship is not even in a crisis - it is simply "out". This can be traced back to a fourth mistake we made: We always looked at publications to store and evaluate, and at products to offer and forgot that the real basis of publications, of knowledge usage, of problem treatment is communication: that communication means much more than some selected modes of formal communication like publishing or offering data bases to select from. The change from a network of physically distributed documents (like abstracting services) to telecommunication networks (like in on line-services) only meant a change from one formal mode to an even more formal one.

If we look at our former domain of science and technology the vast amount of communication did not take place via publications but via still more informal modes like conferences, meetings, "gray literature" etc. It is true that a lot of these informal activities became the object of information systems but these systems remained more or less separated from the communication channels. And if we were to be told by online-people that theirs is a new way of communication, then this would be untrue - it is a new way of providing feeble imitations of real communication: faster, more expensive, more exhaustive, less personalized - but it is not communication.

3. THE CHALLENGE OF "INFORMATIZATION"

Taking this situation, it becomes obsolete - in my opinion - to speak about education and training problems of librarianship, documentation and traditional information work. In highly industralized countries it can be viewed at as a world which has gone or, better, should have gone or what may safely be left alone to its traditions.

It is true: as there have been millions of physical documents around for a long time, we will continue with libraries until we have put all books on videodisks and established librarians for them. By and by they will be replaced by people who do not think in terms of shelves but storage cells on discs. This change is not so dramatic to warrant much reflection.

It is true: We will need data bases of citations and announcements just as today. Thus, we still need people to establish them until they become an automatic by-product of the new modes of electronic publishing.

With these two examples I would like to draw our attention to the point that the factor of technological development has now tended to become the main source of influence. This new trend has been called "informatization" but the time available here is not enough to give you an introduction to what "informatization" may mean for individuals and society. But I should at least sketch out some of its basic features and give examples of its implications.

a) "Informatization" means digitalization. Increasingly, all ways of technologically supported communication will go digital and therefore will become a logical option for electronic data processing. With office automation, for example, more and more written material will be produced in machine readable form (just as most printed material is today). But this is not restricted to texts composed of discrete elements: digital telephone, digital TV, digital audio discs, digital video discs are coming (or

are already here). Nearly everything will be recordable and accessible in digital form. We will still use other forms of representation but only for comfort and joy, with digital representation in the background. This seems to be too distant now to affect present libraries but most of the developments of in house-networks already plan such integrations and optical fibres at least will provide us with respective communication lines.

b) "Informatization' means the integration of modes of communication. The new network generations (digital, optical fibres, satellites) will offer the possibility to technologically integrate services which have so far been separated. Text, facsimile, moving pictures, sound etc. will be transmissible via the same network and tentatively sent and received by the same (integrated) communication station. It would therefore be possible easily to change from one mode to the other, to integrate modes, to select the most appropriate modes, to combine mass, group, individual and personal communication and information systems. Interactive Videotex is one of the first inventions to point in that direction. (Again, office networks form another area in which developments of this kind are moving fast.)

c) "Informatization" means new communication characteristics. Mainly through the integration of telecommunication and data processing at least, the following characteristics will dominate our future communication world

- *time independency: We will be able to send and receive messages automatically, i.e. without someone else having to be at a specific place at a specific time.*
- *space independency and mobility: We will be able to send and receive messages without going to a specific place which is technologically equipped (because the equipment will either already be distributed or mobile).*
- *group communication: We will be able to communicate within groups, between groups, between groups of groups etc. without assembling them at a specific place and time.*

This is all, to some extent, already available.

d) "Informatization" entails certain forms of "artificial intelligence". A lot of the methods we were proud to develop in information work become rather simple if we compare them with the expected characteristics of artificial intelligence and the fifth computer generation. Cataloguing, indexing and abstracting no longer seem to be a central concern of specifically trained people as they will soon be done by machines. The developments in text understanding, processing and production are enormous though to reach the same stage of development for speech and images may take a little bit longer. Expert systems already are in some respect much better than traditional information systems, in some instances even better than human based systems (if we restrict them to specific knowledge functions). I would expect that at least in the long run most of the skills we nowadays train people in will become rationalized.

4. ERROR–CORRECTION AND NEW ORIENTATION

This brief over view on some features of technological development should, by now, have made us aware of the fact that it would not be appropriate to think only of how the errors of the past can be corrected by the professions. The need to re-think has to be combined with the necessity to exploit the new potentials of technologies to be expected. Let us go back to the problems I started with

a) Physical elements will not disappear but will become obsolete if we think in terms of organization of information and communication. Everything will become available in automatically processable form. Since everybody will be networked together, the physical document will become the end product of a process of generating and transmitting. But what has to be organized is not the handling of the physical document itself but the processing and transmission of representation of pieces of something (knowledge, information). Traditional librarianship may continue but what is needed is the organization of the nonmaterial processes. If we want to use "information" for improving the information action of individuals and groups, we can forget about libraries as being necessary - not within the next few years but not too far beyond, at least as far as new material bases are concerned.

b) If nearly everything is available in automatically processable form, it can be handled by means of artificial intelligence, giving a lot of interested parties access to these possibilities. Nearly everything produced as a result of an intellectual process can automatically end up in a data basis from which services can be derived. "Retrieval systems" and "data bases" will develop almost anywhere where knowledge or its surrogates are produced, and all access points can be networked. The building of data bases and the offering of information services then will no longer be the task of a group of specialists but will become part of every activity related to knowledge and information (as has always been the case in non-technologically based areas). If everybody has to become an "information (provision and seeking) specialist", considerations about training them in a specific profession become obsolete.

c) If virtually everyone is networked together, then in principle the centralized organization of data (in central data bases out of which one has to select one's respective pieces) may at least be parallelized by a decentralized organization of

- sharing of experiences, knowledge, information (by common data bases, distributed data bases)
- exchange of experiences, knowledge, information (by conferencetype forms of group communication)
- searching for the specialist able to produce or provide help, advice, etc.

People will at least have the technological facilities to organize themselves in a way that those who can help will help those who need it. Relatively autonomous problem sharing communities will form by using and communicating via the network; newcomers will also use the network to find an appropriate group or form a new one.

From the viewpoint of the technological potentials developing rapidly, it seems to me that one vision of the future could be knowledge or information produced anywhere being made available via networks. Thus, those who work or suffer in a common area could share their resources via the network, possibly establishing their own knowledge bases. Individuals or groups with acute problems could then use the network to find someone who might be able to help or advice. For such people, information resources would be available through the network.

5. THE ROLE OF INFORMATION SCIENCE

It is obvious that under these conditions information science has to adopt a new role. So far two aspects have dominated information science and its educational approaches

- constructive; i.e. development of methods, techniques and system components. This aspect will change in two directions: simple methods will be replaced by algorisms. Further, more complicated techniques will be developed by computer science (e.g. in artificial intelligence).
- empirical; i.e. research in the use of information sources and services. This may remain an important domain from the scientific viewpoint but since information work can no longer be considered as concentrated in large institutions, the information specialist himself may perhaps not need that empirical knowledge at all.

But as has been pointed out, information science knowledge will be needed anywhere where people produce or need information. What is needed from the viewpoint of the "everyday information specialist" is scientific advice for action. The development of system components, guidelines, rules etc. must be a central concern of information science and the diffusion of these rules into the social field will be of high importance. We would like to call this the "action-oriented aspect" of information science.

But information science has some more responsibilities within the context of informatization. The main driving force in information and communication technology will not only radically change the whole area of information work but society as well. Sometimes we refer to this new state of society as the "information society", one in which all areas of social life will change considerably under the impact of the new technologies. But things don't happen automatically. The only fact we can be sure of is that new technologies will be introduced: they are economically too important, their potential for future progress is too great for them not to be used.

But they will, on the other hand, cause a lot of serious problems: rationalization leads to redundancies whole trades and industries will disappear, concentration processes will speed up (worldwide), societal cohesion will be, and is, endangered, individual isolation possible. The opposite potentials are possible as well - more free time, less spatial movements, more local autonomy, more everyday comfort, new creative opportunities etc. What is needed are strategies of how to introduce the technologies and services, how to achieve humane or more humane information society. Visions of 1984 or a "brave new world" are at the moment more real than optimistic ones but both are within the range of the technology-potentials. What might be needed is something like an "information culture" where we adapt ourselves and our culture to include the rational, sensible use of the technologies. The ages of the "script culture" and the "Gutenberg galaxy" are fading away at the moment without clear indications of what might follow.

This for me would be the most important task of information science: to try to describe how our societies could and should change into "information societies" where information and communication technologies form the nervous system of society, where an "information culture" is the brainware of such a society. I would call this the strategic feature of information science and would give this feature the intellectual lead in the quadruple of features outlined so far.

6. EDUCATIONAL IMPLICATIONS

It seems to me that information science has to distinguish more sharply what its educational and training functions may be. Its traditional role can be described in two ways

- to contribute to a more methodologically oriented training of information workers (like librarians).

Since these occupations become less important if no new functions of libraries can be found, this role may be retained but obviously without great enthusiasm. It perhaps remains the bread-and-butter-basis, but nothing more.

- *to contribute to the training of information specialists (together with a respective technical discipline). This may be retained as well, but again would not be important enough to justify a discipline of its own. In fact, it looks more likely that this may become an element of all education and training programmes (leaving information science with the education of the educators).*

During the last years, information science has been regarded as contributing to several other occupational roles, like

- *designer of information systems. If "information system" is interpreted in terms of electronic data processing, it is doubtful whether information science could stand the competition with computer scientists who increasingly learn those things former information scientists were proud of.*
- *researchers into the human aspects of information (organization of information processes). This role may be retained although it is doubtful whether these specialists would be more information science educated social researchers or social research oriented information scientists.*
- *managers of information agencies and services. Since the importance of large institutions is diminishing, it could be argued whether this occupational role might be important enough.*

All these occupational possibilities do have their traditions and merits and may remain, albeit in a perhaps decreasing number. What I foresee as societal imperatives towards the educational function of information science would be some roles which perhaps could only be described as functions and not as occupations or even professions.

a) specialists for application problems of information and communication technologies which take care that technology applications are designed from the viewpoint of human beings and not from that of technology.

b) application aides who counsel appliers in a way that application decisions are made taking all conditions (human, technological, economic, short- and long-range) into consideration;

c) service innovators who are able to see and implement new development and application potentials;

d) synopticians who are able to overview all the different technological, social and cultural developments in their coherence;

e) assessment specialists who are able to assess the potential effects of technologies, decisions, applications etc.;

f) cultural consultants who try to implement actions to support the development of information culture.

These are only some roles or functions which are needed. All of them together can be distinguished from roles towards which traditional training considerations belonged, in so far as they do not imply that people can be trained or educated to take these roles. Instead, they require very specific personal traits which, by educational measures, can only be supported, developed, or brought into daylight etc. What is needed are people who are

- *creative*
- *able to think in the abstract and concrete at the same time*
- *imaginative*
- *headstrong*
- *flexible*
- *able to combine algorisms with fantasy.*

Such people cannot be made, they can only be found and then shaped, improved, refined, strengthened. But virtually every present curriculum works against such motivations. Reality forces information science educators at least to fulfil the bread-and-butter programmes of today but they should not do so without trying to reach the more needed, more important but less obvious goal: of educating those people who are really needed. There is only one way to do so:

- *stay alive (by doing what tradition requires and pays for)*
- *be intellectually attractive (by not believing that since we have to live from tradition this is the purpose of living)*
- *do not prevent good people from entering the study of information science (by sticking to tradition, syllabuses, programmes etc.)*

*We all should have the courage to stop talking about curricula and look at the people or into the programmes, to see which of them perhaps has the potential of shaping the "information innovators" of the future.**

*Although the author was unable to attend, his paper was presented by his colleagues R.D. Hennings and G.R. Windel.

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Conference paper

EXPANDING HORIZONS
TRENDS IN EDUCATION FOR LIBRARY AND INFORMATION SCIENCE

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Abstract

Librarians are but one group of players on a large and rapidly expanding information stage. The growth of the "Information Complex" has created new career opportunities, new challenges and new tensions for the traditional library/information profession. Social, demographic, educational and technological change is forcing the profession to reassess its role and activities. In the next decade the structure and character of library/information science education will have to undergo significant change if it is to respond to the needs of the "new wave" information workers.

INTRODUCTION

I originally promised that in this paper I would prescribe strategies for coping with change. On reflection, this seems to me an unrealistic (not to say arrogant) goal. Instead, I shall limit myself of outlining some of the macro trends in the external environment which are likely to have an impact on the shape and structure of professional education for library/information work in the years ahead.

For most Western nations the last decade has been characterised by economic stagnation, inflation, rising unemployment and declining manufacturing output. The prognoses for the next decade would seem to suggest that the situation will not change greatly, and that the world will continue to work its way painfully through an extended economic recession.

Amid the gloom, one area of growth and promise stands out - the so-called information sector of the economy. In a number of developed countries the sale of information products, services and consultancy skills is coming to represent a significant element in balance of trade figures. Economists now speak of 'information as a 'tradeable commodity' and as the 'new capital' (replacing raw muscle power and energy). Within the ranks of our own profession there is wide acceptance of the view that information is an important social and organisational resource which needs to be managed effectively.

The statistics of the 'information explosion', first assembled during the 1950s and 1960s, opened our eyes to the fact that information was 'Something Big'. Nowadays we are regaled with statistics on the size and growth potential of the information complex, some of which I have gathered together here to give you a feel for the dimensions of this rapidly expanding complex.

The Information Complex: some facts and figures

Fact 1. By 1970 more than 50% of the economically active in the US were working in information-related occupations

Fact 2. More than 2.5m journal articles are published worldwide each year

Fact 3. More than 3m abstracts were produced by members of NFAIS in 1982

Fact 4. Worldwide there are more than 55,000 current journal titles

Fact 5. The number of inter-library loan requests made worldwide each year is 20m

Fact 6. In 1982 there were more than 1,000 on-line databases worldwide and 200 hosts

Fact 7. Annual expenditure in the UK on libraries is £550

Fact 8. 1980 revenue for the Western European on-line database market was £123m

Fact 9. 1985 revenue forecast for the Western European on-line database market was $ 1400m giving an annual growth rate of 63% for the period 1980-1985.

Fact 10. In 1983 there were more than 1.2m desktop computers installed in Europe

Fact 11. The estimated global market for Information Technology products in 1985 is £104.7 billion

Fact 12. More than 20m households in the US are cable TV subscribers

Fact 13. 11% of all UK households have a microcomputer

(Note: these figures should be treated as indicative).

THE INFORMATION COMPLEX

Statistics such as these are all very fine, but they do not tell us a great deal about the components and dynamics of the information complex. Terms like 'information industry', 'information society', 'information economy', 'post-industrial society' or 'information complex' are sometimes used without any explicit

statement of what is entailed. Information is an elastic term, and, inevitably, there are problems of conceptualisation. The statistics and forecasts we are offered are all contingent upon particular definitions or analytical perspectives: the more restrictive the definition, the more conservative the resultant statistical indicators - and vice versa.

A few generalisations can, nonetheless, be permitted. The information complex (however we care to define it) is large and growing. In the last century there has been a pronounced shift in occupational ratios, with a declining proportion of the workforce being employed in the primary and secondary sectors of the economy (i.e. agriculture and manufacturing industry). More and more individuals are routinely engaged in the creation, processing and communication of information, and real growth is now occuring in the quaternary sector (i.e. the information and knowledge industries). The number of players on the information stage is large and expanding, and the private sector is increasingly involved in the creation of new information products and value-added services. The commercialization/commoditization of information has, however, created tensions between the public and private sector, and led some observers to speak in terms of the 'information rich' and the 'information poor'.

The information complex undoubtedly offers opportunities to individuals with high-level information skills. The increasing specialisation and professionalisation of information work has created a demand for highly-qualified manpower. However, on closer inspection it becomes clear that the opportunities which exist are, in the main, beyond the grasp of the traditional library/information worker. It is worth noting that two of the best known surveys of the information complex (those of Porat (1) and the OECD (2)) employ very broad definitions of information work, such that the term embraces teachers, postal and telecommunication workers, researchers, information machine workers and many others besides. It would be naive to conclude that because these occupations are swept under the umbrella term 'information' they can be colonised by traditional library/information workers.

The library/information profession is not a key player on the information stage. According to Porat's calculations the core library/information profession accounts for approximately 0.5% of the total employee compensation paid to all information workers (in the US - in 1967). A more recent study (by King Research in conjunction with the University of Pittsburg (3)) confirmed that the core profession was a relatively insignificant element in the overall picture. I suspect this is what Robert Taylor (erstwhile Dean of the School of Information Studies at Syracuse University) meant when he spoke of the shift from a Ptolemaic to a Copernican information universe, with libraries slowly, but inexorably, being pushed out to the periphery.

Within mainstream (i.e. institutionally defined) library/information work there is little evidence or prospect of growth. Unless there is a sustained economic upturn, or radical changes in public expenditure policies, this situation seems likely to persist. Ironically, this stasis will be counterpointed by marked growth in the non-core areas (e.g. database design and marketing; systems analysis and design; creative programming; information broking and consultancy; telecommunications; artificial intelligence; new product development etc.). I am inclined to feel that we shall see a widening of the gulf between these two broad communities (the non-core and core): one characterised in terms of high profits and high technology; the other in terms of a not-for-profit service orientation and low/intermediate level technology.

A DIVERSIFYING PROFESSION

All this quite naturally leads on to the question 'who should be responsible for meeting the education and training requirements of these two professional constituencies - the traditional (core) and the emergent (non-core)?' and its corollary, 'is it any longer feasible to aim for integrated education across sectoral and occupational lines?'

In fact, it may be misleading to speak in terms of just two constituencies. Within both the traditional and the emergent information professions there is considerable variety and differentiation between work roles and orientations. We need to ask whether it is possible to develop core curricula for what is a rapidly diversifying and fragmenting profession. After all, the skills, attitudes and outlooks needed by, say, community librarians or ethnic minority specialists working in a public library system, are quite different from those needed by a subject specialist in an academic library, or an on-line search intermediary in an industrial information unit. The same probably applies as fas as the 'new' information professions are concerned. Different competencies, skills and disciplinary backgrounds will be called for, depending on whether a student is entering the world of electronic publishing, writing applications software or designing management information systems.

Historically, the library schools have produced individuals to occupy a finite number of occupational slots, in a finite number of operational environments. As a general rule, educators have known what employers require in terms of the end-product, and employers for their part have faithfully and consistently turned to the library schools to satisfy their

manpower needs. Today the picture is somewhat different. There are many more functional slots than previously, both within and outside institutional library contexts. This means that the spectrum of skills required is greater, which, in effect, means that more comprehensive, more sophisticated and more flexible education and training mechanisms are required if these skills are to be taught effectively. The problem for library schools (as I intimated in my earlier paper) is not simply that more needs to be taught now than ten years ago, but that the rate at which new skills have to be acquired by faculty, and new subjects and methods incorporated into the curriculum is outstripping the schools' collective ability to manage novelty.

CHANGE

The novelty I am referring to is a consequence of recent change in the social and economic environment. What I should like to do now is consider some of the more significant changes (actual and predicted) and their likely impact on professional education and manpower planning. Since I am principally concerned with developments in the United Kingdom, I shall draw on the findings and conclusions of the recent LISC report 'Library and information work in a changing environment: a discussion paper' (4). This paper deals with four types of change: economic, social and demographic, educational and technological. Let us briefly consider each of these in turn.

Economic: Global recession has put pressure on manufacturing and service industries to innovate, to increase output and productivity, and to improve their competitiveness in the international marketplace. Organisations are becoming increasingly dependent on, and aware of the importance of, information in achieving these goals. The provision of accurate, timely, customised information requires new and improved information support systems and services. At the same time, financial restrictions in both the public and private sectors make it essential that information services operate in an efficient and cost-effective manner. To ensure that these twin goals can be met, new education and training programmes will be required, at both the basic and post-experience level.

Social and demographic: Factors to be considered under this heading are: (1) the rising unemployment level; (2) the growth in the number of elderly and retired people and the falling birth rate (which affect the tax base and by extension the funds available for public sector libraries and information services); (3) the progressive reduction in working hours and the additional time available for leisure activities; (4) the need to give more attention to the problems of minority and disadvantaged groups; and (5) the effects and long-term implications of new entertainment/broadcasting media (e.g. cable TV).

Educational: Fundamental changes in the structure and character of educational institutions and delivery mechanisms can be expected in the course of the next decade. There will be greater emphasis on modular provision, credit transfer across institutions and the establishment of open learning schemes. Constraints on tertiary education expenditure will require new approaches to resource attraction and allocation, and increasingly industry will be obliged to underwrite the cost of developing training aids, materials and packages. Lifelong education will become the norm and the concept of a single career will be replaced by the notion of several careers. This, in turn, will create a demand for new and flexible education and training provision nationally. In general terms, education will be geared more to the needs of the consumer than previously.

Technological: Library/information work has been greatly affected by developments in information handling and communications technologies. Most library housekeeping functions can be automated, and many other activities performed using cheap, off the-shelf, multi-functional microcomputers. References can be retrieved, and documents ordered on-line. Local/community information, as well as much national information, can be accessed via videotex systems. Great volumes of information can be archived, manipulated, retrieved and communicated in ways that simply were not thought of ten years ago. The next decade promises equally spectacular advances.

More broadly, the downward penetration of information technology will gradually raise the modal level of computer literacy and generate a demand for new information technology training and awareness programmes in both the primary and secondary education sectors. In due course, technology will affect the way we work: an increasing proportion of the knowledge/information workforce will operate from home-based terminals, or from community processing centres. The availability of inexpensive computing power, coupled with the falling costs of accessing remote databases, will encourage the setting up of 'cottage' information industries and interactive community networks. As we move towards the reality of a 'wired society' home-based transactional processing will become the norm for certain sectors of society (e.g. home delivery of library services).

These and other changes in the external environment will create new opportunities and fresh problems for the library/information profession. The LISC report recognises the looming difficulties and argues that the need for high-quality entrants to the profession will be greater and more urgent than ever before. It also concedes that the traditional library/information workforce does not attract its share of the most able

school-leavers and graduates.

Assuming that the predicted changes do come about, what will the implications be as far as library/information education and training is concerned? I have tried to list some of the more probable trends and their effects in the table below.

TREND	EDUCATIONAL IMPLICATIONS
increase in no. of information jobs	rise in demand leads to increased output from tertiary education institutes
	new opportunities lead to greater inter-institution competition for students and public recognition
increased specialisation and professionalisation of information work	increased specialisation in courses
	generalist become a thing of the past
	information skills are added on to disciplinary skills and not taught as a stand-alone discipline
	specialist skills have to be imported to library schools from other academic departments
	fewer library school teachers will have operational library backgrounds; specialist skills will be sought
	more high flyers, fewer middle-ranking and more paraprofessional library/information workers will be required
	new, high-level degree programmes will be set up in institutes other than traditional library schools
	shifts in pattern of demand may lead to rationalization in the number of library schools and the range of courses available to the intending student
	better quality entrants to the profession will be required
	new approaches to recruitment and selection of students will be required
information technology/information in society taught to examination level in secondary school curriculum	entrants to library/information degree programmes have sound basic grasp of information issues and technologies: leads to increased specialisation in course offerings, and puts pressure on library educators to improve their own skills and professional knowledge
	a new generation of school teachers has to be trained to teach the new information curriculum: new opportunity for the library schools to develop their role
developments in educational technology	education generally becomes more open, flexible, modular, consumer-driven and accessible to a wider population.
	new interest in distance education leading to demand for new teaching materials
	library school in competition with commercial education and training providers
	problems for library schools in raising funds to develop new distance learning schemes.
	lack of national planning and cooperation between library schools means that overall provision is sub-optimal

technological convergence	new breed of information manager/coalescence planner required to undertake organisation-wide information policy formulation
	increasing overlap between library/information courses and other courses in the information technology/systems/communications arena
de-institutionalisation of library/information work	students need to be prepared to work outside the four walls of the library; new techniques, new attitudes and new outlooks will be required.
	new curricula will emerge based on the concept of the 'information system' or 'community of need' rather than particular techniques or subject areas.
social divisions emphasized by the new technology	politicization of public library work; educational programmes reflect growing interest in political considerations and the growing tensions between the public and private sectors in the provision of information services

If the world is a-changing along these lines, then presumably entrants to the library/information profession are going to require specific knowledge, skills and attitudes. In a recent study carried out by King Research in the US, an inventory of competencies required (for the present and the future) was produced (5). This list is a by-product of detailed analyses of certain information occupations and discussions with practitioners, researchers and educators in the library/information community.

Competencies identified by King Research (1983)

Knowledge

- all operational aspects of library/information work
- implications of organising information in different ways
- understanding of different retrieval languages
- capabilities and limitations of automation
- management/supervisory skills
- understanding of organisation's mission etc.

Skills

- communication: oral, written, interpersonal etc.
- reference interviewing skills
- quantitative/statistical skills
- retrieval skills
- PR: marketing: feasibility study presentation
- evaluation skills

Attitudes

- willingness to help
- perseverence
- flexibility

CONCLUDING REMARKS

The future I have painted in this talk is characterised by change and uncertainty. In the interests of objectivity and fair play I would like to end on a rather more optimistic note by quoting from the comments of Glyn Harman (University of Texas) on the report produced by King Research and Pittsburg University on the emerging information profession.

> "...the survey demonstrates that although information professionals work in different types of organizations with diverse concepts, technologies, and clientele, they share a set of common concerns associated with the concepts basic to information flow within the general systems paradigm: input, processing, output, memory, small or large systems or subsystems, and so on. The general systems paradigm readily incorporates these concerns and could provide a key basis for conceptual unity and a common language among information professionals for purposes of education, information resource integration, and standard occupational classifications... Additionally, care should be taken to recognize that individual information occupation are to some degree unique, and could resist highly standardized classification."

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PART IV
SUMMING UP

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SUMMING-UP

Wilfred L. Saunders
Conference Director

It is almost an impossible job, but I will try to highlight foci for later discussion. The themes have ranged very widely indeed and there was a fair measure of disagreement but quite a lot of agreement, too.

Ostensibly our subject was professional education for the Library and Information World. In fact, inevitably - - and properly - , it took us into some major general issues, some of them quite fundamental.

This is quite right: education is only a second stage activity and must be related to goals and objectives. Here it seemed there was an absolute consensus on some of the most vital points, notably the central role of information in national development whether scientific and technical, economic, cultural, social, or personal. There has been an almost complete consensus on the fact that, when we say Information Science, we imply/include Librarianship. The one possible exception has been Dr. G Wersig's approach.

More specifically, in our consideration of professional education, there have been 3 main streams dealt with:

The state of the art, national practices, and in fact a good deal that emerged from other papers. Particularly - and properly so - there were several Yugoslav contributions, which suggests more implications for Yugoslavia as a touchstone in this summary. There has been a look at the future, especially in relation to what some of our Yugoslav colleagues made of it. Finally, there have been specialists subjects.

As said at the beginning, these themes have not simply been treated serially: interconnections were made all the time.

There was surprisingly little repetition. Exceptions were some major themes, such as Information Science.

Kenneth Roberts said he had been afraid of some repetition, but did not feel this justified. Anyway, as we say in the trade, it is all oblique reinforcement. Running like a thread through nearly all our commentaries, from one point of view or another, was the impact of information technology.

It is good news that our area of work is finding explicit recognition in places where it matters to learn from Kenneth Roberts that it is one of Unesco's 14 major programme areas and from Dr. Prelog that in Yugoslavia Information Science is recognised as one of 36 recognised sciences.

We might in fact take a brief look at some of the matters that emerged from Yugoslavia - for in many ways it is a microcosm of the totality of our discussions.

From Dr. Markić we find an interesting facet of library manpower - supply and demand. The country wants more than she can produce. From the U.K. we learnt that it was not clear if this was due to under- or over-production. From Dr. Markić's presentation, we learnt of the main elements of an infrastructure. Though the total library bookstocks are not high, there is a large Yugoslav publishing output. Infrastructure is a key issue in many ways. It could even be that Yugoslavia's main problem is one of infrastructure.

We touched several times on the matter of selection of future librarians - what qualities are we looking for? , how should we try to identify them? - but Dr. Markić did not say very much about the disciplinary background of the students. We also learnt of new subjects being introduced - particularly sociology of the book , and reading.

Turning to Information Science education, interdisciplinary studies were mentioned by Dr. Prelog. There was some discussion, even about what it meant, but virtually no opposition to the reality of this need was voiced, save on tactical grounds by R.M. Hayes. By the way, did I hear correctly that in Yugoslavia the whole possibility of crossing disciplinary boundaries are under threat and that there is an embargo on new programmes?

There was good news from Macedonia - a task force identified as high level and enthusiastic by Dr. Dosa has been set up. I very much liked Mrs. Pejova's reply when she was asked if putting resources into Information Technology was at the expense of literacy education: she said that basically literacy in the traditional sense was no longer a problem, while information illiteracy now seemed to be the main threat.

What is clear from all the Yugoslav presentations is that Yugoslavia has emphatically rejected any question of staying out of information technology.

It was acknowledged that low pay is a problem and we had a nice quip about the income difference between an Information scientist and a Librarian being £ 2.000 a year, and the equally nice risponse that UCLA's and others'

experience shows that money isn't everything - that some of their best students went into relatively low paid public sector as a career choice: their commitment was to service.

I must mention here fascinating and informative bibliometric analysis of Masters' theses: I wish that more institutions did this. An interesting point made here was the apparent role of documentation as a link between Information science and Librarianship (but what is documentation?). I must say that I am looking forward to seeing the final analysis from Zagreb. One last point which I myself brought up: the apparent inequality of education opportunities on a geographical basis shown up by the analysis. It was good to be reassured that this is a matter which is being dealt with by the Association of National Libraries. Yugoslavia was altogether a fascinating case study of problems and challenges.

Turning to more general issues: what is the subject that we as professional educators are committed to? We had the inevitable, and as usual enjoyable, debates about what - if anything - Information Science is. B. Rugaas referred to it as a tool; R. Hayes asked if it was the end or the tool, and clearly believed the latter: Martha saw it as perhaps proving the theoretical basis for librarianship - but Blaise said precious few librarianship processes had a theoretical base; Gernot Wersig saw its task as preparing for the information society. Equally inevitably, we debated whether it was a science at all; words like embryonic were used, and reference made to degrees of "hardness' and "softness".

We had a lot of good discussion about if and how Information Science relates to librarianship, archives, museology and records management. The strangest divisive thrust came probably from Dr. Wersig, of Librarianship and Information Science. I must say, personally I was much more attracted by B. Rugaas's proposition that we should seek similarities rather than differences, and work for a unified profession - with all that this implies for professional education. This word "profession" cropped up many times - often in a very interesting way - not least in reference to the implication of professional ethics, which may be worth further discussion.

The matter of status occupied us too, not least in terms of salary. Closely connected with this was the matter of image; again, there may still be things to be said on the subject.

Not the least of the problems concerning the image of the profession is who and what exactly the profession comprises of. They are not longer, we agreed, just people working in libraries and information units; our work is bursting out of its institutional settings, no longer confined to 4 walls. What are the implication of this for professional education: how shall we educate these new breeds that are emerging? How shall we persuade them that our idea of our professional society has any relevance to them? Is there in fact to be an erosion of professional societies? And if there is, what does this mean for standards, for accreditation, and indeed for ethics?

There was a lot of discussion about the sort of people we should be trying to bring in, to educate. There is a strong feeling that, in the future, subject knowledge will be more and more important. Combined subject and information expertise will produce effective intermediaries. Might this be where an important part of our future lies?

We seemed to praise - to be looking for - more outgoing personal characteristcs than have been conspicuous in the past: entrepreneurial and innovative flair; the ability to talk to holders of funds and purse strings of marketing ability, aggressiveness in the best North American sense.

Great play was made of the importance for this future breed - or some of them - of management skills, particularly a special sort of management: information resource management.

And, particularly, we believed it important to develop inquiring, sceptical, analytical, problem-solving approaches.

The most potentially dramatic influence on professional education is of course information technology and the information society - and we gave that pretty full treatment. Wersig's vision was shock treatment, whilst Blaise Cronin's employment of random fact and statement was breath-taking, convincingly presented but in many ways just as explosive. Dr. Wersig's edifice, we must remember, was built from a single premise - largely peculiar to the Federal German Republic. Above all, it is highly time-dependent. What he had to say would sound far less fearsome on a 20-25 year basis, say, than on a 5 or 10 year assumption. And in Blaise's case we need to remind ourselves that in general he speaks of highly developed societies.

That said, there seemed to be much in both papers that most people present were prepared to go along with, not least that we must resist being technology-pushed, that we must remain human.

What seems to be in no doubt at all is that the future will call for change, for great resilience in professional

educators. Keeping them trained, up-dated, will be a major task in its own right. So too will be the continuing education of practitioners themselves: Dennis Gunton made clear that a professional qualification is no longer a meal-ticket for life.

Continuing education in fact seems likely to loom larger and larger on the professional horizons of the future. For some parts of the developing world it was suggested that a Continuing Education Centre might be a good bet in its own right, when resources do not run to a full scale professional school. We didn't really go far into that.

It was very appropriate near the end to hear of all that is being done internationally by UNESCO to promote the cause of education for the information professions. With the regional schools they certainly seem to be pointing the way forward. But that is not all. It has at the same time a fine record in sponsoring and supporting shorter courses for continuing education.

More good news toward the end came in the report on progress here in Yugoslavia with school libraries development. I particualrly liked the emphasis on training in independent thinking - finding out - which is surely the way forward into an information society.

We followed up with our own excursion into independent thinking with a paper "Education for Research in Library and Information Science in the Nordic Countries" that Blaise felt to be at a very high level of abstraction - which Bob Hayes denied - and which evoked some extremely good and high level discussion.

And finally there was an excellent paper presented on that much neglected but key group, the sub-professionals, which reminded us that our central concern is with human resources and how best to educate and utilise them.

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